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COPYRIGHT, or, as it was formerly termed, copy, has been defined by Lord Mansfield, 'to signify an incorporeal right to the sole printing and publishing of somewhat intellectual, communicated by letters.' By this 'somewhat intellectual' is to be understood something proceeding from the mind of the person by whom, or through whom, such a right is claimable. Yet, although mere republications of the compositions of others are no subject for copyright, it is by no means limited to such productions as contain new or original ideas. Thus translations both from ancient and modern languages, notes and additions to existing works, even mere compilations and abridgements, are similarly protected. As to these last however it is often a question for courts and juries to decide, whether the compiler or abridger really intended to present the original matter in a more useful or agreeable form, expended his own labour upon it, and so entitled himself to protection, or whether he only sought, under false pretexts, to defraud the author or his assigns of a portion of their lawful profits. This decision depends of necessity on the circumstances of each particular case. Further, a right of copy attaches to the authors of ideas expressed by other symbols as well as letters, to musical composers for example.

The origin of copyright must be sought in the general conviction which has always prevailed of its justice and expediency. 'When a man,' says Blackstone, 'by the exertions of his rational powers has produced an original work, he seems to have clearly a right to dispose of that identical work as he pleases; and any attempt to vary the disposition he has made of it, appears to be an invasion of the right. Now the identity of a literary composition consists entirely in the sentiment and the language. The same conceptions, clothed in the same words, must necessarily be the same composition; and whatever method be taken of exhibiting that composition to the eye or ear of another, by recital, by writing, or by printing in any number of copies, or at any period of time, it is always the identical work of the author which is so exhibited, and no other man, it hath been thought, can have a right to exhibit it, especially for profit, without the author's consent.'

Accordingly it has been supposed that a common-law right of copy existed in England previously to any statute on the subject. As a legal proposition however this cannot be supported by the proper and direct proof of a fair judicial decision before the passing of the first statute relating to it in the reign of Queen Anne; inasmuch as it never appears to have been directly controverted up to that time. But, in the absence of positive authority, it may be fairly inferred, from the old charters of the Stationers' Company, and much more from their registers, whence it appears that some thousands of books, even as early as the times of Elizabeth, passed from one owner to another by descent, sale, and conveyance; from acts and ordinances of parliament which necessarily imply a recognition of it by the nature of their provisions respecting printing; and from decrees of the Star-chamber, which, though not binding precedents, are evidence of the opinion of many learned men as to the then state of the law. It is further to be noted, that the non-existence of express decisions on the point is accounted for down to 1640 by the necessity of obtaining a license prior to the printing of anything, so that authors had no occasion to apply to civil tribunals for protection, as none but themselves and those claiming under them were so licensed, and he who printed a book without this was subject to enormous penalties.

It has hardly been controverted in the various arguments that exist upon this common-law right of copy that literary compositions in their original state, and the incorporeal right of the publication of them, are the private and exclusive property of the author. The question made has been that this property was put an end to by publication: and yet without publication it is useless to the owner, because it is without profit, and property without the power of use or disposal is not property. In that state it is lost to society as a means of improvement, as well as to the author as a means of gain. Publication is therefore the necessary act and only means to render such a property useful to the public and profitable to the owner. If, says Lord Mansfield, the copy which belonged to the author before publication does not belong to him after, where is the common law to be found which says there is such a property before. All the metaphysical subtleties from the nature of the thing may be equally objected to the property before. It is equally detached from the manuscript or any physical existence whatsoever. There is in fact nothing in the act of publication to vary the nature of the right, so that that which is necessary to make a work useful and profitable should be taken as destructive at once of an author's confessed original property against his expressed will. It has accordingly been the almost unanimous opinion of the high authorities who were called on to decide the point, that by the common law of England authors were entitled to copyright, and as there was nothing in statute or custom to determine it, or distinguish this from other species of property, that such right was once perpetual. The arguments for the contrary opinion are collected in the judgment of Mr. Justice Yates in the case of Millan v. Taylor, 4th Burrow, p. 2354.

From the above premises arose the question, after the passing of the first statute respecting literary property in 1710, whether by certain of its provisions this perpetual copyright at common law was extinguished for the future. After some less important decisions in the negative on motion in the Court of Chancery and elsewhere, the question was solemnly argued before the Court of King's Bench, during the term, when Lord Mansfield presided, in 1769. The result was a decision in favour of the common-law right as unaltered by the statute, with the disapproval however of Mr. Justice Yates. Subsequently, in 1774, the same point was brought under the consideration of the House of Lords, and the decision of the court below reversed by a majority of six judges in eleven, as Lord Mansfield, who adhered to the opinion of the minority, declined to interfere; it being very unusual, from motives of delicacy, for a peer to support his own judgment on appeal to the House of Lords. It is somewhat remarkable, that although this could be hardly termed a decision, as the judges were in point of fact divided equally, it has since been held so important as a precedent and sustained in so many subsequent cases, that it must now be considered as settled law that perpetual copyright is put an end to by the statutes.

The two universities were not slow to protect themselves from the consequences of this decree in the case of Donaldsons and Beckett, and obtained from Parliament, in 1775, the following year, an act for enabling the two universities in England, the four universities in Scotland, and the several colleges of Eton, Westminster, and Winchester, to hold in perpetuity their copyright in books given or bequeathed to the said universities and colleges for the advancement of useful learning and other purposes of education. This protection, sanctioned by penalty and forfeiture, so long as such books are printed at the presses of the universities and colleges respectively, is still enjoyed, unaffected by the general statutes on the subject; and a similar protection is extended to the university of Dublin by 41 Geo. III., c. 107.

The chief provisions of the 8 Anne, c. 19, entitled 'An act for the encouragement of learning, by vesting the copies of printed books in the authors or purchasers of such copies during the times therein mentioned,' as regards the effecting of that purpose, were, that the authors of books already printed, and those claiming under the author, should have the sole right and liberty of printing them for a term of 21 years and no longer; and that the authors of books to be printed, and their assigns, should have the same right for 14 years and no longer. And the last clause of the statute directed that after the expiration of these 14 years the same right should return to the authors, if living, for another 14 years. The persons infringing these provisions were to be punished by forfeiture of the pirated book to the proprietor, and a penalty of one penny for each sheet, one-half to go to the crown and the other half to the informer, provided always the title to the copy of the book had been duly entered with the Stationers' Company.

The 41 Geo. III., c. 107, which extended the same law to Ireland, gave a further protection to authors and their assigns by action for damages and double costs, and raised the penalty per sheet to three pence, to be divided in the same way.

The 54 Geo. III., c. 156, by which literary property is at present mainly regulated, is entitled 'An act to amend the several acts for the encouragement of learning by securing the copies and copyright of printed books to the authors of such books and their assigns.' By the fourth section of the act, after reciting the statutes of 8 Anne and 41 Geo. III., by which authors and their assigns had the sole liberty of printing for 14 years and no longer, and after reciting that it will afford encouragement to literature if the duration of copyright were further extended; it is enacted, that after the passing of this act, the author of any book, and his assigns, shall have the sole liberty of printing and reprinting such book for the full term of 28 years from the day of publication, and, if the author shall be living at the end of that period, for the residue of his natural life.

With regard to books at that time already published, it is enacted that if the authors then living should die before the expiration of fourteen years from publication, their representatives should have the benefit of the second fourteen years; and if the authors should survive till twenty-eight years from publication, themselves should have the benefit for the remainder of their lives. But the rights of all assigns are saved in both cases.

The penalties for the infringement of copyrights are the same as in the former statutes, but with the limitation that all legal proceedings under the act must be commenced within one year.

The results to be collected from the statute, and from subsequent decisions upon it, as far as protection to the rights of authors is involved, may be briefly stated thus, as a summary of the existing law.

1. The published works of any author deceased before the 29th July, 1814, are wholly unaffected, and at this time public property. 2. The published works of any author at that period living, but who died within fourteen years from the time of first publication, go after his death to benefit his assigns, if he has assigned his interest therein, for the remainder of that fourteen years; but in all cases, whether he has or has not assigned, to his personal representatives for another fourteen years. They afterwards become public property. 3. The published works of any author at that period living, but who dies more than fourteen, and less than twenty-eight years from the date of publication, go to his assignees if he has assigned, and to his personal representatives if he has not, for the residue of the twenty-eight years. They afterwards become public property, as they are at his death if he survive twenty-eight years. 4. The published works of any author at that period living, more than twenty-eight years having then elapsed since publication, are unaffected by the act, and continue, as they were before, public property. Such is the law with regard to works published before the passing of the 54 Geo. III., c. 156; with regard to works published since it is as follows:—

1. If an author does not assign his interest in the work, and lives more than twenty-eight years after publication, the copyright remains his for life, and after his death becomes public property. 2. If the author does assign his interest, the copyright attaches to his assigns for his life; and if he die within twenty-eight years, it attaches to them for the remainder of that term. I[illegible]terwards becomes public property. 3. If the auth[illegible] assign his interest, and dies within twenty-eig[illegible]ublication, the copyright attaches to his perso[illegible]tives for the remainder of that term. It th[illegible] public property.

It has been said that the exclusive property of authors in their manuscripts has always been recognized by the law. But this principle extending only to prevent the printing or circulating copies of them without the license of the owner, it was found necessary to pass recently a statute for the peculiar protection of the authors of dramatic compositions. This is the 3 Will. IV., c. 15, entitled 'An Act to amend the Laws relating to Dramatic Literary Property,' which, after reciting the 54 Geo. III. c. 156, provides that the author of any dramatic piece, not hitherto printed or published by authority of him or his assigns, shall have as his property the sole liberty of representing it, or causing it to be represented, at any place of dramatic entertainment; and the author or assignees of any such work, printed and published within ten years before the date of the act, shall have the same privilege for twenty-eight years from publication, and for the remainder of the author's life, if he longer live. The penalty for violating these enactments is to be enforced by action for damages, with double costs, to be brought within twelve months from the commission of the offence.

There are certain works excepted from the benefit of the law of copyright from the nature of their contents. Such are, all publications injurious to public morality, inimical to Christianity, or stimulating, either as libellous or seditious, to a breach of the peace. This must however be understood of their general tenor, and not of isolated passages. As far as a rule on the subject can be laid down, it is, that any work containing matter for which a public indictment or private prosecution could be sustained is not protected by the law, but may be pirated by other parties at pleasure, who, if sued for penalties under the act, are allowed to give in evidence the nature of the composition which they have published, in order to defeat the action. This is a remarkable exception to the general rule of law, that none shall take advantage of his own wrong; and its operation is quite as remarkable, the effect of the rule having often been to disseminate more widely that which the law has declared not to merit protection.

The protection given to authors by the statute of copyright is coupled with conditions of some particularity, although it is by express words in the fifth section exempted from depending on them. Besides the registry at Stationers' Hall, which is to be made within one month for books published within the bills of mortality, and within three months for all others, at a penalty of five pounds, and eleven times the price of the book, the 54 Geo. III., c. 156, requires that eleven copies of every work shall be delivered on demand in writing within twelve months for the use of the British Museum, Sion College, London, the Bodleian Library at Oxford, the Public Library at Cambridge, the Library of Advocates at Edinburgh, the libraries of the four Scotch universities, and the libraries of Trinity College and the King's Inns, Dublin. It has been decided, and the decision is most important, as affecting many works of the greatest value and expense, that works published in parts or numbers are not liable to this tax until completed. 2 Younge and Jervis, 166; 4 Bing. 540. Farther, by a very recent statute, 6 and 7 W. IV., c. 110, the 54 Geo. III., c. 156, is repealed, so far as relates to the delivery of copies of books to the four universities of Scotland, Sion College, and the King's Inns, Dublin, compensation being given to those institutions upon an estimate of the annual value of books supplied upon an average of three years, ending the 30th of June, 1836.

Besides the special copyrights of the universities secured to them as before mentioned by statute, there still exist certain prerogative copyrights attaching to the owners in perpetuity. Of these the chief belong to the king, which were more numerous and considerable formerly than at present. Many are now quite obsolete, such as those of almanacs, law-books, and Latin grammars; and others very questionable, such as that of the exclusive right to print the English translation of the Bible. The king has a prerogative copyright in the liturgy and other services of the church, in proclamations, orders in council, and other state papers, and in the statutes. It has been decided, that the University of Cambridge shares by letters patent in the king's prerogative of printing acts of parliament. The House of Lords also exercises an exclusive privilege, somewhat fallen into disuse, of publishing its own proceedings as the supreme court of judicature.

The usual modes of legal proceeding to prevent or punish the infringement of copyright, or as it is more usually termed, piracy, are by action for damages, or for the penalties given by the statute; or more commonly still, by obtaining an injunction in equity to prohibit the unlawful publication, which affords immediate and summary redress. This is always granted where the legal title of the plaintiff to the work is made out, and the identity of the pirated publication with his own shown to the satisfaction of the court. The proof even of an equitable title has been held sufficient to qualify him for this remedy. Mawman v. Tegg, 2 Russ. 385. Neither will the court be restrained from granting the injunction, by proof that the matter pirated forms only a part of the publication complained of, and that what is original will be rendered useless to the defendant and the public by prohibiting its sale. But as this mode of proceeding presses very severely upon defendants, and often inflicts irreparable injury, the court, where any doubt attaches, will either refuse the injunction altogether, or grant it only on condition of the plaintiff's bringing an action immediately, to have the merits of the case decided by a jury with the smallest possible delay.

These legal protections are for the most part found effectual in restraint of domestic piracy. But over the frequent and daily-increasing practice of foreign piracy, by reprinting English works abroad, they exercise no useful control, although the 54 George III., c. 156, expressly includes within its prohibitions the importers of foreign editions, and the sellers of them with a knowledge of their origin. Notwithstanding this, most popular productions of English authors are immediately reprinted in France and Germany, and are to be obtained in England at little more than their original cost. A practice so destructive of the fair profits of mental labour can only be effectually redressed by prevailing on foreign countries to extend the benefit of their own laws against literary piracy to alien as well as native authors. With respect to America, a memorial has recently (1836) been transmitted from this country to Congress, praying for some law to protect English copyright in the United States. Many English works are reprinted in America; and the reprints may be, and frequently are, with a little contrivance sold in England at lower prices than the original publication. In this instance the English author loses in another way: his English edition, which would sell in America, is supplanted there by an American reprint, which costs the publisher only paper and printing. The American author suffers in the same way in England. Some arrangement therefore between these two countries for the extension of copyright would often make a book twice as valuable to the author, and would of course be for the benefit of the reader, as it might be published at a lower price

A notice of the law of copyright would be incomplete which did not advert to some other compositions which receive from statute a protection analogous to that of literature. Such are engravings, etchings, and prints, maps and charts, and sculpture of all kinds. These resemble written works as regards the incorporeal right in them accruing to the author by the exertion of his mental powers in their production, but differ as they also require a good deal of his manual skill and labour, and are therefore his property upon the same general principles as any other manufacture. Such productions therefore are even more plainly entitled to the protection of the law than books.

The chief statutes affecting the copyright in works of design, engraving, and etching, are the 8 George II., c. 13, which vests it in the inventor, designer, and proprietor, for fourteen years from the first publication, and enforces this provision against any person pirating the same by forfeiture of the plate and prints, and a fine of five shillings for each print, to be recovered by action within three months of the discovery of the offence. The 7 George III., c. 38, extends the term of copyright to twenty-eight years; and in addition to the subjects of the former statute includes maps, charts, and plans, under the same conditions. It also extends the time of bringing an action for the penalties to six months. The 17 George III., c. 57, gives the owner of the copyright a further remedy of action for damages and double costs within the same limits of time.

With regard to models, casts, and other sculptures, the 38 George III., c. 71 vests the right and property in these for fourteen years in the proprietor, and gives him a special action on the case against the offender, if brought within six months. These provisions were rendered more effectual by 54 George III., c. 56, by which double costs were given, and an additional term of fourteen years superadded in case the maker should be living at the end of the first term.

As to sculpture certainly, but more doubtfully as to prints, for there have been conflicting decisions on the point, the work must bear upon it the name of the maker and the date of publication to entitle it to the protection of the law.

The right of patents also presents many legal features analogous to those of copyright, but this subject requires a separate notice. [PATENT.]

COQUIMBO. [CHILE.]

COQUIMBO, a town of Chile, and the capital of the province of Coquimbo, about seven miles from the bay of Coquimbo, was founded in 1544 by Don Pedro Valdivia, who called it La Serena, by which name it is still sometimes known. It is a poor town, with a population which has been estimated at 10,000 souls; but other estimates reduce it to 4000. The streets are all at right angles to each other, of moderate width, but very dirty; the houses, which are generally of one story, have small gardens attached to them, owing to which circumstance the town occupies a much greater surface than the population would lead one to expect. It contains six or seven churches and a public hospital. The Puerto, or port, is nothing more than a collection of about a dozen miserable huts, with a custom house, situated at the head of a small indentation of the coast open to the northward. No fresh water can be procured, and supplies of all kinds are scarce and dear. There are no foreign importations direct to Coquimbo: supplies are obtained from Santiago or Valparaiso. From 500,000 to 550,000 dollars are annually exported to Europe in British men-of-war, besides gold; but the duty on this article being very heavy, it is always smuggled on board, and consequently no estimate of the quantity shipped can be formed. The port is in 29° 57′ S. lat., 71° 17′ W. long., about 200 miles north of Valparaiso.

The district abounds in mines of gold, silver, copper, and iron: the iron is not worked, on account of the scarcity of fuel.

COR CA'ROLI, a name given by Halley to the star of the third (or 2½) magnitude in Canes Venatici, in memory of Charles I. It is situated on the neck of the lower dog, and, when figured, has a heart surmounted by a crown. The name is not much in use among astronomers.

COR LEO'NIS. [REGULUS.]

CORA'CINA, a genus separated from the crows by Vieillot, and divided by him into four sections. The first comprises those species which have the bill furnished at its base with velvety feathers (*Les Col-nus*, naked necks); the second those whose nostrils are covered with setaceous feathers, directed forwards, and whose upper mandible is notched towards the end (*Les Choucaris*, Graucalus); the third those whose bill is naked at the base, and notched at the point (*Coracina gymnocephala*, Vieill., *Corvus calvus*, Latham, for example); and the fourth, that curious species on which Geoffroy St. Hilaire founded his genus *Cephalopterus.*

Cuvier, in the last edition of the 'Règne Animal,' defines **Graucalus** to be the Greek name of an ash-coloured bird (oiseau cendré), and says that three Choucaris out of four are of that colour. M. Vieillot, he adds, confounds these birds with his *Coracinæ*, which comprise the *Gymnoderi* and the *Gymnocephali.*

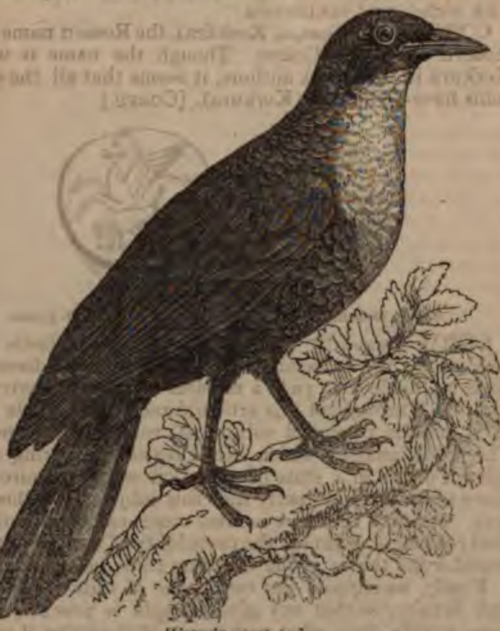
M. Lesson, who places the group under the *Ampelidæ*, observes that the genus *Coracina* is far from being determined. Thus, he observes, M. Vieillot places under it the *Cephalopterus* of M. Geoffroy-Saint-Hilaire, the *Choucari*, and the *Col-nu*, or *Gymnoderus*. (He might have added the *Gymnocephalus* of Geoffroy and Cuvier.) Temminck adds to it many of the *Cotingas* of Le Vaillant; but for his own (Lesson's) part, he adopts the term *Coracina* for that group of birds which Cuvier has collected together under the name of *Piauhaus.*

Genera. Coracina, Lesson. (Coracina, Temminck; Les Piauhaus, (Cotinga) Cuvier; Piauhau, Querula, Vieillot.)

Bill depressed, smooth, ciliated at the base, thick, narrowed at the point, angular above, a little curved towards the end, slightly toothed at the point; lower mandible a little flattened below; head and neck feathered, but without any ornamental plumes, and without any naked skin.

Example. *Coracina scutata*, Temm. *Coracias scutata*, Lath.

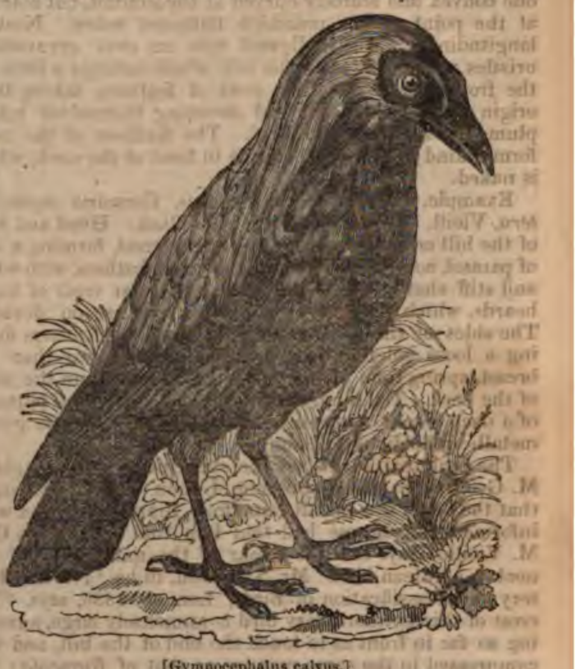
This species differs but little from *Coracina rubricollis*, *Muscicapa rubricollis* of Gmelin, in the colour of its plumage; but the wings are shorter. In *C. rubricollis* the plumage is all black, with the exception of the throat and front of the neck, which are of a purpled rose-colour. In *C. scutata* the red, which covers the throat and breast, goes as low as the upper part of the belly, and the bill is not black, as it is in *C. rubricollis*. Locality, Brazil, which is also the habitat of *C. rubricollis.*


[Coracina scutata.]

Gymnocephalus. (Coracina, Vieillot.)

M. Lesson observes that MM. Vieillot and Temminck place the *Gymnocephali* (Bald-heads) among the *Coracinæ*, and that Cuvier contents himself with observing that *Corvus calvus*, Latham, the type of this new genus, has the bill of the Tyrants, with the ridge (culmen) a little more arched, and a great portion of the face denuded of feathers. Le Vaillant, he states, regarded this denudation of the skin in the front of the head as the result of a particular habit, and in the 'History of the Birds of Paradise' has printed a note, in which he affirms that he had received from Cayenne a specimen, having this part well covered with feathers; but, M. Lesson adds, that he himself had seen at Rochefort more than twenty skins of *Gymnocephali*, and that all had the face bare of feathers. However it may be, he continues, this genus entirely requires revision.

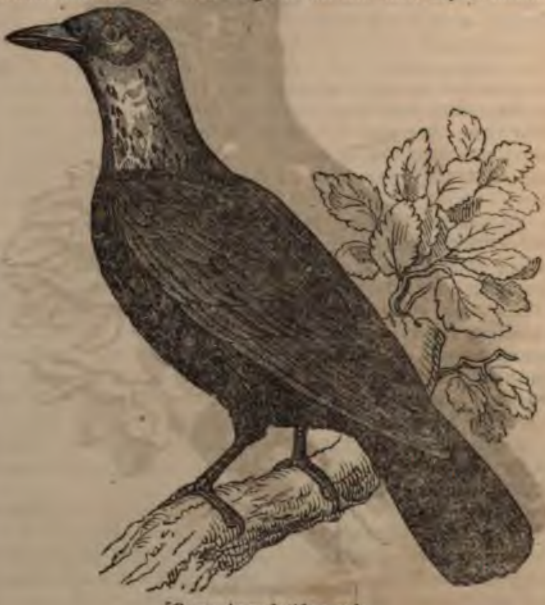
Example. *Gymnocephalus calvus*, *Coracina gymnocephala*, Vieill., *Corvus calvus*, Lath., *Capuchin Bald-Head.* Size of the crow, and of the colour of Spanish snuff, or, as some authors write it, Capuchin colour, whence the Creoles of Cayenne give it the name of 'Oiseau mon père.' The quills and the tail-feathers are black. The large beak and ample forehead bare of feathers give a singular air to this bird. Vieillot observes that it has been compared to the rook, on account of the nakedness of the head, a comparison which seems to him just; 'for,' says Vieillot, 'it has not this part naked till it is adult, the young, like the young rook, having the head entirely feathered, and even the nostrils covered with small setaceous feathers, as I can testify, from the inspection of a young individual, of which I have made mention in the first edition of the *Nouveau Dictionnaire d'Histoire Naturelle.*' Locality, Guiana.


[Gymnocephalus calvus.]

Gymnoderus. (Coracina, Vieill., Temm. Cotinga, Le Vaill.)

The principal characters of Gymnoderus, Geoffroy-Saint-Hilaire, rest on the possession of a bill like that of the *Coracinæ* and *Cephalopteri*, with a partially naked neck and a head covered with velvety feathers.

Example. *Gymnoderus fœtidus*, *Coracina gymnodera*, Vieill., *Corvus nudus*, Lath., *Gracula nudicollis*, Shaw., *Gracula fœtida*, Linn., *Col-nu*, Buff. Rather larger than the jackdaw, but the body is thick and fleshy. The sides of the neck are entirely naked, and only present some traces of down. Buffon's figure, on the contrary (Planches


[Gymnoderus fœtidus, male.

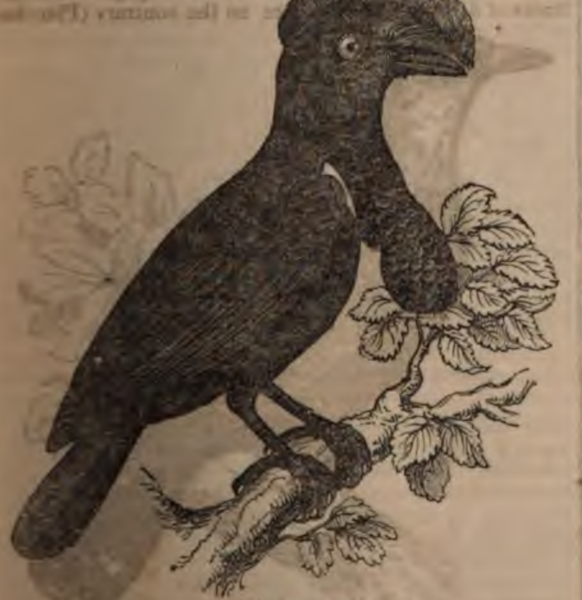
enlum. 609), represents this part as being clothed with a considerably thick down. Upper part of the head, back of the neck and throat, covered with small close-set feathers like black velvet. External edges of the quills of the middle of the wing, the last quills, and all the wing coverts, bluish grey. Great quills and tail-feathers black, with bluish reflections. The rest of the plumage, bill, and feet, black. Eyes red brown, with a yellow skin beneath. The female is smaller, and of a brownish black. Locality, Brazil and Guiana.

Cephalopterus.

Bill strong, robust, mandibles nearly equal, the upper one convex and scarcely curved at the summit, not notched at the point; lower mandible flattened below. Nostrils longitudinal, open, hollowed into an oval excavation; bristles at the border of the bill, which infringe a little on the frontal feathers. Two rows of feathers, taking their origin on the forehead, and elevating themselves into a plume or crest on the head. The feathers of the neck form a kind of pendant pelerine in front of the neck, which is naked.

Example. *Cephalopterus ornatus*, *Coracina cephaloptera*, Vieill. Colour a uniform blue black. Head and base of the bill ornamented with a plume or crest, forming a sort of parasol, composed of straight elevated feathers, with white and stiff shafts, and terminated by an ear (épi) of black beards, which projects forwards (se renverse en devant). The sides of the neck are naked, but long feathers forming a loose pelerine, and hanging down lower than the breast, spring from beneath the throat and from the sides of the neck. Tail long, slightly rounded. General plumage of a deep black. Crest and feathers of the pelerine giving metallic reflections (Lesson).

The bird that furnished the description was brought to M. Geoffroy-Saint-Hilaire from Lisbon. M. Lesson states that the belief was that it came from Brazil, but that a well-informed Portuguese had told him that it was from Goa. M. Vieillot says that the colour of the naked skin of the neck is cerulean blue. Mr. Swainson, in his 'Natural History and Classification of Birds,' London, 1836, says, 'The crest of this extraordinary bird is immensely large, advancing so far in front as to touch the end of the bill, and it is compressed in the same manner as that of *Rupicola*; but the ends of the feathers, instead of meeting so as to form a sharp ridge, suddenly recede from each other, curve outwards, and form a most elegant drooping line of plumes, hanging over on the sides, so as to shade the face like an umbrella. The figures that have hitherto been given of this rare bird are all taken from the specimen in the Paris Museum, and which has been sadly distorted in the setting up. A minute examination of this specimen has convinced us that the frontal feathers, instead of being raised over the bill, as Temminck represents them, partly repose and overshadow it, at least as much as do those of *Calyptomena* and *Rupicola* (vol. i. p. 41).' The species above noticed is the only one known.


[Cephalopterus ornatus.]

CORAL. [Polyparia Corticifera.]

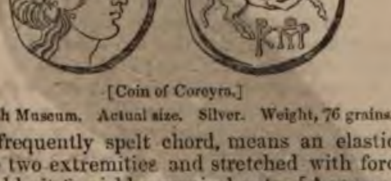
CORALLIA. [Polyparia Corticifera.]

CORALLINES. [Pseudozoaria.]

CORANTO, a quick dance. [Courante.]

CORBEL, a projecting piece of stone, wood, or iron, placed so as to support a weight of materials. Corbels are sometimes in the form of the modillion or mutule employed in entablatures, and also like the console of a window. Small semicircular towers projecting at the angles on perpendicular surfaces of large towers or other edifices are supported on a series of plain or moulded corbel stones. In some of the colleges in Oxford and Cambridge the mullions and roof of semicircular windows are supported in the same manner. The machicolations of towers are almost always supported on corbel stones, as may be observed in the old gates of Southampton, Canterbury, and York. This projecting of one stone beyond another is technically called 'corbelling out.' This is done in brickwork as well as in masonry. In the interior of some churches the construction of the roof appears to be supported on corbels, the ends of which are often carved, and represent an angel holding a shield. In Norman architecture the cornice is supported by a row of corbel stones, the ends of which are also carved. In old English castles the main beams of the floors were frequently carried on large corbel stones, as at Porchester Castle. The term bracket is sometimes used for a corbel. Bracket however is better applied as synonymous with cantilever. Small wooden brackets often differ from corbels and cantilevers in being merely nailed to a perpendicular piece of wood and not having a bearing on a wall, as is always the case with corbels and cantilevers.

CORCY'RA (Κέρκυρα, Kerkúra), the Roman name of the modern island of Corfu. Though the name is written Kerkura in the Greek authors, it seems that all the extant coins have KOPKYPA (Korkura). [Corfu.]



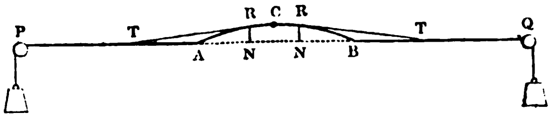
[Coin of Corcyra.]

British Museum. Actual size. Silver. Weight, 76 grains.

CORD, frequently spelt chord, means an elastic string fixed at the two extremities and stretched with force sufficient to enable it to yield a musical note. [Acoustics, vol. i., p. 97. Throughout this article A means the article Acoustics, and the page and column of vol. i. are referred to.] The close analogy which exists between a string and a column of air in a state of vibration would require more space to elucidate properly than this subject will allow us to give: we shall therefore assume some results of mathematical reasoning, point out the probability of those results, and consider the theory of the vibrating cord independently.

Firstly, we suppose our cord to be of uniform thickness and density, so that any given length is precisely of the same quality, from what part soever of the string it may be cut. The want of this condition being practically fulfilled is sometimes sensibly felt in violin and violoncello strings, which are then called *false*. A player whose intonation is perfect upon a perfect string, has to learn a new instrument when he attempts to play with a false string; to say nothing of the harmonics which must be heard more or less becoming discordant.

Let us first suppose a string of indefinite length, and not so acted upon by gravity as to hang downwards, stretched at the two ends by equal weights. The string is a cylinder of uniform diameter and density. Let us next suppose that a part of the string is placed on a mould which catches two points and holds them fast, and stretches the intermediate part into a curve which differs very little from a straight line. Let the mould be suddenly removed, and let us further suppose that, in removing it, we are able to communicate any velocities we please to the different points of the stretched part. We have then, at the moment of starting, a system represented in the following diagram, where AB



(dotted) represents the part in question before the mould was applied, and it is ACB the instant the mould is taken away, all the points between A and B being in a state of motion upwards or downwards. The string will not remain an instant in its present state: the first presumption is that the moment the points A and B are set free a disturbance will take place in the parts of the string both between P and A, and between Q and B, the disturbance travelling from A towards P as well as from B towards Q. The first point in which we are interested is this: with what velocity will the disturbance be propagated? and the answer is, that the disturbance travels throughout the string with the same velocity, depending upon its material and the weight with which it is is stretched, according to the following law: Let each of the equal weights P and Q be as heavy as c feet of the string: then the velocity of communication is so many feet per second as a bullet would acquire, if it were allowed to fall *in vacuo* down a perpendicular of c feet, or $\sqrt{2gc}$ where g is the velocity which gravity communicates in one second, or $32\frac{1}{6}$ feet. For instance, let the string be iron wire, every cubic foot of which weighs 7200 ounces avoirdupois. Let the diameter be one-twentieth of an inch, and let the weights P and Q be each 20 pounds or 320 ounces. Then the weight of x feet of the string is ($\frac{1}{20}$ of an inch being $\frac{1}{240}$ of a foot)

$$3{\cdot}14159 \times (\tfrac{1}{480})^2 \times x \times 7200 \text{ ounces}$$

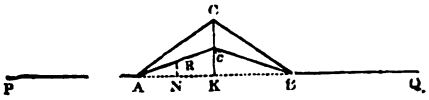
which made equal to 320 gives $x = 3259{\cdot}5$ feet and

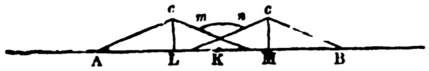
$$\sqrt{2 \times 32\tfrac{1}{6} \times 3259{\cdot}5} = 457{\cdot}93 = 458 \text{ nearly},$$

or 458 feet per second is the rate at which the disturbance is communicated. [CYLINDER.]

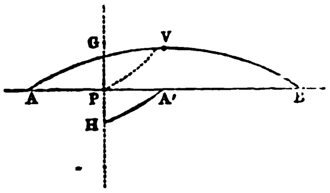
We now ask what is the nature of the disturbance communicated. It suggests itself as possible, that there may be some species of disturbances which travel only in one direction: for instance, that we might so proportion the velocities of the disturbed points to their positions, that AP should remain undisturbed, that the points from A towards the right should drop one after another into their places, while those from B to Q should be successively disturbed. The answer, again derived from mathematics, is, that such disturbance is possible, and that the conditions under which it will take place are: 1. That C being the highest of the disturbed points, all the points from A to C must be moving *downwards* at the first instant, and all those from B to Q *upwards*. 2. That the velocity of the points must be as follows: At any point R draw a tangent RT to the curve of disturbance. Then the velocity of the point R must be such as would, if continued uniformly, carry the point R from R to N or from N to R in the same time as the whole disturbance is propagated from T to N. These conditions being fulfilled, we may represent the successive states of the string by cutting out a piece of paper of the form ACB, and carrying it along the string PQ at the uniform rate per second which we have found for the propagation of the disturbance. If the directions of the velocities be all reversed, then the disturbance travels from B towards P. Let us call such disturbances *simple*: and with respect to the direction in which they travel, *direct* or *retrograde*. We further learn from mathematical analysis, that any disturbances whatsoever, taking place upon the same points at the same instant, produce a compound disturbance of which the values of RN and the velocities at the point R in the compound disturbances are the algebraical sums of the values of RN, &c., in the component disturbances. And moreover, that any disturbance whatsoever, be the law of its form and velocities what it may, can be compounded of two simple disturbances, one direct and one retrograde. So that the moment the mould is removed, the disturbances will begin to travel in different ways. As long as they have not completely separated, there will be points remaining under the effects of both; but when they have had time to separate completely, we should, were the rapidity of transmission not too great, see the direct disturbance travelling by itself in one direction and the retrograde in the other.

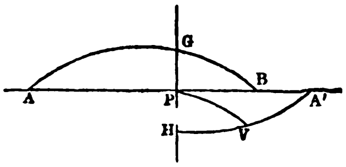
To illustrate this, suppose we wish to ascertain the effect of the disturbance ACB, as drawn, the velocities throughout being nothing at all at the instant the mould is withdrawn. The two simple disturbances which would produce this are two of the form A*c*B, such that at any point R the velocity would bring the point through RN while the disturbance is communicated through AN. If we suppose a direct and retrograde disturbance of such a kind, there will be at the first moment no velocity at any point of ACB, since those of the direct and retrograde disturbance compensate each other throughout. But let a time elapse during which the direct and retrograde disturbances travel to M and L. Then the form of the string at that moment will be A *c m n c* B, where the part *m n* arises from the composition of the two parts of the disturbances which yet remain acting on the same points. (See another instance of composition, A. 92.)



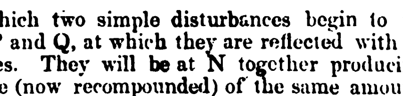


We may thus trace the effect of disturbance upon an indefinitely extended string; but such a string would produce no musical sound, for which (A. 95,2) it is necessary that there should be a continued reiteration of the same action upon the air repeated at equal intervals. Now supposing a finite string, stretched at the ends, we must ask what takes place when the disturbance comes to the end of the string. And from mathematical analysis again, the following is the answer: Let P be the fixed end of the string, and choose the instant at which, had the string continued, the disturbance would have been B V A. Make a disturbance H A′ equal and opposite to G A, and let it be compounded with G V B, on the supposition that it is part of a disturbance proceeding from P, such as would by itself bend the string in the opposite direction. Then P V B or P V A′ is the state of the string at that instant. In fact, the disturbance is converted into an equal and opposite disturbance proceeding in the contrary direction.





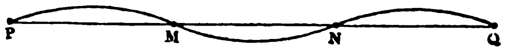
Now let us suppose a string like that of a piano-forte, sharply struck near one end. It is altogether a gratuitous assumption, knowing what we do of the imperfect elasticity of matter, to suppose that the disturbing effect of the blow immediately affects the whole string. A certain disturbance is produced upon a part (it may be a very small part) of the string. Then what is that perceptible phenomenon, the reiteration of which produces a musical tone? Let us suppose the string struck at one-fourth of the length from its end, and suppose that the tension is such that disturbance is propagated at the rate of 2000 feet a second, the length being four feet. A disturbance is produced at M, from which two simple disturbances begin to travel towards P and Q, at which they are reflected with the same velocities. They will be at N together producing a disturbance (now recompounded) of the same amount as before, but on the opposite side of the string. This takes place while four feet are described at 2000 feet per second, or is repeated 250 times per second. From M to N there is then a succession of effects upon the air, which are most powerful at M and N, owing to the coincidence of the disturbances. This is repeated 250 times in a second, and



yields the musical note corresponding to that number of aerial pulsations per second.

We must again advert (A. 97-2) to the use of the term vibration. The complete vibration in our use of the word is made while the disturbance travels from M to N. Thus some writers say 16 vibrations per second give the lowest musical sound, where we say it is 32. But their vibration is double of ours.

By supposing the whole string put in vibration, or any simultaneous disturbances communicated to it, the effect may similarly be shown to be, that at the end of the time during which disturbance would be propagated along the whole string the effects are all reversed, but are of the same magnitude; while in a second of such time they are all restored. We thus easily arrive at what is called the fundamental sound of a string. With regard to the harmonics (A. 96-2) of a string [HARMONICS], they are not so easily shown to be necessary. We shall, however, first show that such effects are always possible; that is to say, that if a string begin to vibrate so that its two halves, or its three thirds, &c. are disturbed together, such an effect will be produced. Suppose, for instance, the initial state of the string to be P M N Q, where P M, M N, and N Q are the thirds. During the time in which the direct disturbance of P M would be communicated to M N, that of M N would be communicated to N Q, the direct disturbance in N Q would be made retrograde, and so on. Hence though the whole string may vibrate, each of the parts has a vibration by itself in one third of the time. If we were to destroy the vibration of the whole string by compounding with the preceding such a disturbance as would always destroy the velocities at M and N, there would then be three strings, each vibrating in one-third of the time of the whole string. The ear can appreciate such contemporaneous sets of vibrations, and accordingly in this case perceives both the fundamental note of the string and the twelfth above it. If a large and miscellaneous set of disturbances be communicated at once, those only will exhibit cycles of effects, which make the halves, the thirds, &c. vibrate together, and we can say little more without entering into mathematics. But in a string it may always be observed that we seldom hear the octave of the fundamental note, and generally the twelfth and seventeenth. No reason can be given for this which is perfectly unobjectionable: we do not know whether it is the aptitude of the ear to distinguish these, or of the string to take the corresponding divisions, which is the cause of the phenomenon.



The time of vibration of a string, that is, of complete reversal of all the initial effects, is $l \div \sqrt{2gc}$, where l is the length, and c is as before. It is therefore directly as the length and inversely as the square root of the tension; results which are amply confirmed by experiment.

In all that has preceded we have supposed the string perfectly elastic, and without friction. Neither of these suppositions is true, but since the velocity of propagation of every disturbance is independent of its extent, the gradual diminution of the latter will not affect the phenomenon on which the musical qualities of the string depend. (A. 97-2.) The method of observing the curves in which each point of a string vibrates, recommended by Dr. Young, was to use a string round which small wire is coiled, like the larger string of a violoncello, and to observe with a microscope the reflection of a candle or other bright spot on one of the coils. Sir J. Herschel suggests that a thin slit should be made in a window-shutter, and that the string should be placed with the point to be examined cutting the vertical plane of light. This point would therefore appear bright while the rest is dark. In either case the rapidity of the vibrations would make the curve described by the bright point permanent.

A single string fitted up for experiments is called a MONOCHORD.

CORD (in music). [CHORD.]

CORDAY D'ARMANS, MARIE ANNE CHARLOTTE, commonly called **CHARLOTTE CORDAY**, who numbered among her ancestors the great tragedian Corneille (Lepau, *Chefs d'Œuvre de Corneille*), and was of noble family, was born at St. Saturnin, near Seez, in Normandy, in 1768. The republican principles of the early revolutionists struck deep root in her enthusiastic mind; and her zeal for their establishment was heightened after the rise of the Jacobins, and the overthrow and proscription of the Girondists, May 31, 1793, by the presence and conversation of those chiefs of the latter party who fled into Normandy, in hope to rouse the people in their favour. Resolved to advance the cause which she had at heart by some extraordinary action, Charlotte Corday travelled to Paris, where, having gained admission to the galleries of the Convention, she was still more incensed by the threats and invectives which she heard showered upon her own friends.

Being thus confirmed in the determination to assassinate one of the principals of the dominant faction, whether to deter them by terror, as an act of revenge, or as an example of what she regarded public justice, she chose Marat, one of the most violent and bloody of the Jacobins, to be her victim. After two unsuccessful attempts, she obtained admission to the chamber in which he was confined by illness, July 15, under pretence of communicating important news from Caen; and being confirmed in her purpose by his declaration that in a few days the Girondists who had fled thither should be guillotined in Paris, she suddenly stabbed him to the heart: he gave one cry and expired. Being immediately arrested and carried before the *tribunal revolutionnaire*, she avowed and justified the act. 'I have killed one man, she exclaimed, raising her voice to the utmost, to save a hundred thousand; a villain, to rescue innocents; a wild beast, to give peace to my country. I was a republican before the revolution, and I have never been wanting in energy.' (Mignet, vol. ii., p. 5.) Notwithstanding her confession, the court, with an affectation of impartiality which in this case could be ventured on, assigned her a defender, and went through all the formalities of trial. The speech of her advocate is rather remarkable. He neither denied nor extenuated the act; and acknowledged it to have been long premeditated. 'She avows everything, and seeks no means of justification; this, citizen-judges, is her whole defence:—this imperturbable calmness, this total self-abandonment—these sublime feelings, which, even in the very presence of death, show no sign of remorse, are not natural. It is for you, citizen-judges, to fix the moral weight of this consideration in the scales of justice.'

Charlotte Corday returned thanks to the pleader. 'You have seized, she said, the true view of the question: this was the only method of defence which could have become me.' She heard her sentence with perfect calmness, which she maintained to the last moment of life. Her personal charms were of a high order; and her beauty and animation of countenance, even during her passage to execution, added greatly to the interest inspired by her courage and loftiness of demeanour. She was guillotined July 17, 1793. (*Biog. Univ.*; Montgaillard, *Hist. de France, &c.*, vol. iv., p. 55—59.)

CORDELIERS, so named from wearing a knotted cord for a girdle, were the strictest branch of the Franciscan or Grey Friars. Chaucer mentions them in the 'Romant of the Rose,' l. 7461, but they were not much known by this appellation in England. The name Cordeliers is said to have been first given to certain Franciscans (at that time but recently established) who accompanied the army under St. Louis to the Holy Land. They served in a Flemish corps, the commander of which considered it his duty to report to the king not only their bravery, but their zeal in re-animating the soldiers of his division, who had been on the point of giving way. The king inquired the designation of the pious men, but the officer had lost his recollection of it; he could only say that they were those 'qui sont liés de corde.' From this they received the new appellation of Cordeliers. St. Louis, upon his return to France, gave great encouragement to these Franciscans, and founded a convent for them in Paris. There were ultimately, according to Moreri, no fewer than 284 male and 123 female convents of Cordeliers in that country. (Moreri, *Dict. Historique*, chiefly from Hermant, *Histoire des Ordres Religieux*.)

CORDIA'CEÆ, a small natural order of Monopetalous exogens, with a shrubby or arborescent habit, a gyrate inflorescence, and a drupaceous fruit. The leaves are alternate, usually covered with asperities, and destitute of stipules. The calyx is inferior and five-toothed; the corolla regular, with five stamens proceeding from the tube, and alternate with the segments. There is a pendulous ovule in each cell, and the style is twice-forked. The cotyledons are crumpled or folded in plaits lengthwise. The affinity of the order is almost equal between Boraginaceæ and Convolvulaceæ, but preponderates in favour of the former. The only economical plants contained in it are the Sebesten plums, the produce of Cordia Myxa and Sebestena, the rind of which is succulent and mucilaginous. All the species are tropical.

CORDON, a military term to denote a line of posts and sentries placed around a district or town to prevent any communication between it and the rest of the country. It is chiefly resorted to in cases of any contagious disease having broken out in a place, when it is called a cordon sanitaire; and in order to be effectual, each sentry ought to be able to see his two next comrades right and left. This can be done more easily in the day-time by taking advantage of commanding positions or open grounds; but at night the sentries must necessarily be more numerous and nearer each other.

Cordon in French means also the insignia of an order of knighthood, answering to the English word riband when taken in a similar sense: 'cordon bleu,' 'blue riband,' &c.

CORDONNIERS, originally cordouanniers, cordwainers in English, a word derived from cordoban, the soft tanned leather used for the upper part of shoes, which was first brought from Cordova in Spain, where it was manufactured by the Moors. A society existed at Paris in the sixteenth and seventeenth centuries, under the name of Frères Cordonniers, consisting of the shoemakers of that city, who formed a company, having their magistrates and other officers, and a common treasury, from which the indigent of their own trade were supported. The society was placed under the protection of St. Crispin, who had been himself one of the same trade.

CO'RDOVA, or more properly CO'RDOBA (*Corduba*, *Colonia Patricia*, and simply *Patricia*), was the birthplace of the two Senecas and Lucan. Cicero in his oration for Archias speaks rather disparagingly of the Cordubese poets of his day. Under the Spanish caliphs it became the first seat of learning and the terror and admiration of Europe, from 755 to 1234, when Ferdinand III. of Castile took it. It then contained 300,000 inhabitants. Soon after, in 1238, he repelled its masters, the Moors, as far as Granada, and prepared their total overthrow, which Ferdinand and Isabella accomplished in 1492. Of all the Asiatic grandeur of that empire there is only left its first mosque, which is unique in its kind, but has been partly defaced by its transformation into a Christian cathedral, more particularly since 1528, when some of its 1000 columns were destroyed to erect a chapel in the centre.

Cordova was also the centre of an extensive trade, and noted for the preparation of the goat skins called *cordoban*, a word corrupted into our cordwain, whence shoemakers derived in England their old name of cordwainers, and in France that of cordouanniers, and at last cordonniers.

Although Cordova has sunk into decay under the Christians, it has not ceased to produce literary men, among whom are Juan de Mena, Fernan Perez de Oliva, Ambrosio Morales, Góngora, &c. The great captain, although called Gonzalo de Cordoba, was a native of Montilla.

Cordova at present contains only 45,000 inhabitants within its vast Roman and Moorish inclosure. The *plaza mayor*, or great square, is remarkable for its size, regularity, and neat piazzas. The bishop's palace is a massive building. That of the Moorish kings is now turned into stables for stallions of the renowned Cordovese breed. The town is situated on the north bank of the navigable river Guadalquivir, at the commencement of the finest plain of Andalusia, and on a gentle declivity which descends from the Sierra Morena, and shuts out the north and east winds. The climate of Cordova is delightful and healthy, and the soil extremely fertile. It is 75 miles north-east of Seville, 120 north-east of Cadiz, and 180 south-south-west of Madrid. It is in 37° 52′ N. lat., 4° 45′ W. long.

(Ponz, *Viaje de España*; Laborde, *View of Spain*, vol. ii., p. 29; Gibbon's *Rome*; Talbot's *Travels*; Fisher's *Travels*, &c.)

COREA, is a large peninsula on the eastern coast of Asia, whose sovereign is tributary to the emperors of China and Japan, but otherwise independent.

The peninsula is surrounded on the east by the sea of Japan, on the south by the straits of Corea—which divides it from the Japanese island of Kiou-siou—and on the west by the Hoang-Hai, or Yellow Sea, which separates it from China Proper. It extends, from south to north, from 34° to 40° N. lat., or about 420 miles; but the countries north of the peninsula, as far as 43°, are also subject to the sovereign of Corea, so that the whole country from south to north may be 630 miles. Its width, lying between 124° and 134° E. lat., varies from 100 to 200 miles. Its area may be about 90,000 square miles, or somewhat more than Great Britain.

Corea appears to be a very mountainous country. On its northern boundary is the Chang-pe-shan, a high mountain-range, partly covered with snow, which separates the Coreans from their northern neighbours, the Manchoo. From this chain another branches off in a south-south-east direction, which traverses the whole of the peninsula as far as the strait of Corea. Its highest part is near the shores of the sea of Japan, towards which it descends with great rapidity; and in this part the level or cultivable tracts are of small extent. The numerous offsets to the west, which are less elevated and steep, contain between them large and well-cultivated valleys.

The largest rivers occur in the northern part of the country, where the Thumen-Kiang, rising in the centre of the Chang-pe-shan, runs north-east, and towards its mouth east. It falls into the sea of Japan. Its banks, though fertile, are uninhabited, in conformity to the order of the Chinese emperor; the object of this policy being to have a well-settled boundary between Corea and the Manchoo. The Yalu-kiang rises nearly in the same place, and runs first west, then south. It falls into the Hoang-Hai, according to the Chinese geographers, with twelve mouths. It is said to be navigable for junks 35 miles (100 lees), and for barges about 180 miles (520 lees). The rivers which traverse the valleys of the peninsula have a short course.

The coasts of Corea are high and bold, except in the innermost recesses of the numerous bays and harbours. There are few islands along the eastern shores, except in Broughton's Bay (39° 30′ N. lat.), where they are numerous. In the strait of Corea they are also very numerous, and still more so between the island of Quelpaerts and the southern coast. Between 34° and 35° N. lat. and 125° and 126° E. long., Captain Maxwell found the sea literally dotted with islands and rocks, which he called the Corean Archipelago, and the most south-western group Amherst Isles. Farther north (38° N. lat.) is another group, called James Hall's Archipelago. These islands are rocky and high, but generally inhabited. They are rarely more than three or four miles in length. The largest, the island of Quelpaerts, south of the peninsula, is about sixty miles in circuit, and in the centre a peak rises upwards of 6000 feet above the sea.

Corea is a very cold country. For four months the northern rivers are covered with ice, and barley only is cultivated along their banks. Even the river near King-ki-tao freezes so hard that carriages pass over the ice. In summer the heat appears not to be great. On the eastern coasts fogs are frequent; and La Perouse thinks he may compare them in density with those along the coasts of Labrador.

Rice is extensively cultivated on the peninsula, as well as cotton and silk, which are employed in the manufactures of the country, and exported in the manufactured state. Hemp is also cultivated, and in the northern district ginseng is gathered. Tobacco is raised all over the country.

Horses and cattle are plentiful on the mountain-pastures. The former, which are small, are exported to China. In the northern districts the sable and other animals give fur. The royal tiger, which is a native of the country, is covered with a longer and closer hair than in Bengal. On the eastern coast whales are numerous. It seems that Corea is rich in minerals. Gold, silver, iron, salt, and coals, are noticed in the Chinese geography.

The inhabitants, who are of the Mongol race, resemble the Chinese and Japanese, but they are taller and stouter. Among them are some whose appearance seems to indicate a different origin. They speak a language different from the Chinese and Manchoo, though it contains many Chinese words. They have also a different mode of writing it, though the Chinese characters are in general use among the upper classes. In manner and civilization they much resemble the Chinese, and are likewise Buddhists. Education is highly valued, especially among the upper classes. They seem to have a rich literature of their own, but their language is very imperfectly known in Europe. The valleys seem to be well peopled; but we are so little acquainted with the interior, that hitherto nobody has ventured to give an estimate of the population.

King-ki-tao, the capital, which is a few miles north of a considerable river Han-kiang, appears to be a large place, and is said to possess a considerable library, of which one of the brothers of the king is chief librarian. The name of this town is properly Kin-phu, near Hanhang, or Hanyang. The mouth of the river Tsing-kiang (between 34° and 35°), on the western coast, is said to have a very spacious harbour.

Fushan, according to the Chinese geography, called by Broughton Chosan or Thosan, is a bay at the south-eastern extremity of the peninsula, opposite the Japanese island of Tsu-sima, at the innermost recess of which the town of King-tsheou is built, which carries on an active trade with Japan, and is the only place to which the Japanese are permitted to come.

In industry the Coreans do not appear to be much inferior to the Chinese and Japanese. They mainly excel in the manufacture of cotton cloth and cotton paper, both of which are brought in great quanties to Peking. Other manufactured articles which are exported are silk goods, plain and embroidered, and mats. They have attained considerable skill in working iron, as swords are sent, with other articles, to the emperor of China as tribute.

No country is less accessible to Europeans than Corea. They are not permitted to remain even a few days on any part of the coast. It is not well known what is the reason of this policy, but it seems that the mutual jealousy of the neighbouring Chinese and Japanese holds the king in great subjection. The commerce of the country is accordingly limited to China and Japan; and even with these countries is restricted in a very strange way. No maritime intercourse is allowed between China and Corea, but all commerce is carried on by means of the narrow road which leads along the sea to the town of Fang-hoan, in Leao-tong. But as it traverses the wide district which by order of the Chinese emperor must remain uninhabited, it has become the haunt of numberless ferocious animals, and hence the passage is much dreaded by travellers. Commerce therefore is principally carried on in winter, when the shallow Hoang-Hai is covered with ice along its shores, which are more favourable to the transport of goods than the bad mountain-roads. Besides the above-mentioned manufactured goods, gold, silver, iron, rice, fruits, oil, and some other articles, are brought by this road to Peking. We do not know what the Coreans take in return to their country. The commercial intercourse between Corea and Japan is limited to that between the island of Tsu-sima and the bay of Chosan, and is carried on by Japanese merchants, who have their warehouses at each place. They import sapan-wood, pepper, alum, and the skins of deer, buffalos, and goats, with the manufactured articles of Japan, and those brought by the Dutch from Europe; they take in return the manufactures of Corea, and a few other articles, especially ginseng.

We know nothing of the political condition of the country, except what is communicated by Klaproth from the Japanese geographer Rinsifee; according to whom there are sixty-four commanders of 10,000 men, which would give an army of 640,000 men, and 213 war-vessels. Ritter thinks that these and many other statements of the geographer are taken from the court-almanac of King-ki-tao, and that little reliance can be placed on them. (Broughton; Maxwell, in Ellis's *Journal of Lord Amherst's Embassy*; Mac Leod; Basil Hall; Hamel van Gorcum; Klaproth, in *San Kohf Tsou*; and Ritter's *Asien*.)

CORELLI, ARCA'NGELO, on whom his countrymen bestowed the cognomen of 'Il Divino,' was born at Fusignano, in the Bolognese territory, in 1653. Adami says that his instructor in counterpoint was Simonelli; and it appears pretty certain that his master for the violin, the instrument of his early adoption, and which he never abandoned, was Giambattista Bassani of Bologna. It is stated by the Rev. Mr. Mainwaring, in his Life of Handel, that Corelli went in 1672 to Paris, but that through the jealousy of Lully he was soon obliged to quit that city. On this fact Dr. Burney attempts to throw discredit, but there is no reason to doubt its correctness. In 1680 Corelli visited Germany, where he received extraordinary honours, not only from the public, but from sovereign princes, among whom the elector of Bavaria distinguished himself by the hospitable manner in which he treated the great musical genius. He returned to Rome at the expiration of about two years, and published his first set of 'Twelve Sonatas for two Violins and a Base,' in 1683. A second series appeared in 1685, entitled 'Balletti da Camera.' These were succeeded in 1690 by a third set; and the fourth was published in 1694. His admirable sonatas for violin and base, or harpsichord, in which all violinists are early initiated, were printed, with a dedication to the electress of Brandenburg, in 1700. When James II. sent, in 1686, the earl of Castlemaine as ambassador to the pope, Christina of Sweden, then at Rome, celebrated the event by having an opera written, composed, and performed, in the holy city. The band employed on this occasion consisted of 150 stringed instruments, a prodigious and unprecedented force for those days, and Corelli was chosen as leader, which duty he performed in so satisfactory a manner, that the Italian opera in Rome was placed under his direction chiefly, and in 1700 had arrived at a degree of excellence which it had never before attained in the capital of Italy. He now gained the friendship of the well-known patron of art, the Cardinal Ottoboni, at one of whose *Accademie* he met Handel, then travelling in Italy. As a mark of attention to the great German composer, the cardinal had the serenata, *Il Trionfo del Tempo e della Verità* (afterwards altered into *The Triumph of Time and Truth*) performed, the overture to which being in a style quite new to Corelli, he led it in a manner that displeased the irascible composer, who rudely snatched the violin from the hands of the gentle Italian. Corelli no farther resented this indignity than by calmly observing, *Mio caro Sassone, questa musica è nelle stile Francese, di ch' io non intendo.* (My dear Saxon, this music is in the French style, which I do not understand.) Some satire was half concealed in this remark, for Handel at that time certainly imitated Lully's overtures, and the inuendo, which was a lenient punishment for conduct so violent, could not have been misunderstood by him. Corelli, however, though an exquisite performer in regard to expression and taste, had devoted more of his attention to those high qualities which ought to be considered paramount to all others, than to what is commonly understood by the term execution; he consequently was sometimes embarrassed by having music placed before him which at first sight he could not easily master, and was abashed on finding that musicians infinitely inferior to himself could play it without preparation or hesitation. It was at Naples that he met with some mortifications of the kind alluded to, which prompted him to quit abruptly, and somewhat chagrined, that city, to which he had been very warmly invited, and where it was intended that he should be received with every mark of distinction.

Corelli's greatest work, his *Concerti Grossi*, or Twelve Concertos, were written many years before they appeared in print. They were engraved in score at Amsterdam, and published in December, 1712, six weeks only before their author breathed his last, an event which took place on the 18th of January, 1713. He was buried in the church of *Santa Maria della Rotunda* (the antient Pantheon), where a monument, with a marble bust, is erected to his memory, near that of the greatest of painters, Raffaelle. On the pedestal is a Latin inscription by the cardinal Ottoboni, which records in simple and elegant terms the merits of the composer and the friendship of the writer.

Like many other original geniuses, Corelli was too sensitive to be happy. Occurrences which he should have suffered to pass unnoticed made a deep impression on him, even to the injury of his health. The success of Valentini, whose concertos and performance, though infinitely inferior to Corelli's, became fashionable at Rome, so much affected the great composer—who, having acquired much wealth, ought to have treated fashion with the disdain it generally deserves—that it is supposed to have aggravated the malady which caused his death. Corelli's best works are imperishable. Rousseau has said, that he who without tears can listen to Pergolesi's *Stabat Mater* may feel assured that he has no genius for music. We will also risk an assertion—that those who can without admiration hear the eighth concerto of Corelli, as performed at the Antient Concert, though they may be able to boast great powers of execution as instrumentalists or vocalists, can have no perception of the higher beauties of composition—can possess no soul for pure harmony.

CORFE CASTLE. [Dorsetshire.]

CORFU, the island of, the antient Corcyra, lies off the coast of Epirus, from which it is separated by a channel of very irregular width, being fourteen miles in some places, eight miles opposite the town of Corfu, and only two at its north outlet near Butrinto. The length of the island, which describes a slight curve from Cape St. Catharine, Cassiopê Promontorium, in 39° 51′ N. lat., to Cape Bianco, in 39° 21′, is about 38 miles. Its breadth is very unequal; in the north part, which is much the widest, it extends nearly 20 miles, from 19° 36′ to 19° 57′ E. long. Further south, the island becomes very narrow, being only six miles between the Bay of Yliapades to the west, and the harbour of Gouin to the east. It widens again in the latitude of the town of Corfu, where it is about eleven miles; it then contracts to the south of it, to three or four miles in breadth, terminating in a high-narrow cape. (*Map of the N. part of Greece*, published by the Soc. for the Diffusion of Usef. Know.) The surface of the island is of 227 square miles, and is generally mountainous, especially in the north part. The highest point, according to F. Beaujour, is about 1900 feet above the sea. The mountains are rocky and naked, but the valleys are fertile, and watered by many streamlets, which, however, are mostly dry in summer. The most considerable streams are the Missongi and the Potamo. The island produces oil, wine, vegetables, fruit, flax, and some corn and pulse. Unlike most of the other islands, Corfu produces no currants. There are but few timber-trees on the island. The cattle consists of horses, mules, sheep, and pigs. The game consists of wild fowls, snipes, quails, pigeons, &c. Oil forms the principal article of exportation, and the making of it employs about 1000 presses. The wine, which is mostly of a rough taste, is used at Corfu and in the other islands. Salt is got in considerable quantity in the salt-marshes, which communicate with the sea.

The island is divided into seven cantons: 1°, Corfu, with the town of that name, which is the capital of the island, as well as of the Ionian Islands. The town consists of three parts, the citadel, the town properly so called, and the suburbs. The citadel, which is at the extremity of a cape, and divided from the town by wet ditches and an esplanade, forms a little town with several private houses and churches, and the palace of the lord high commissioner, besides the arsenal and barracks. Two strong castles built upon steep rocks command the whole. The town, properly so called, is surrounded by walls and ramparts, and strengthened by several forts, called Fort Tenedos, Fort Abraham, Fort St. Salvador, and the New Fort. Three gates open on the sea-shore and one on the land-side. The houses are mostly two stories high, with terraces at the top. The streets are tolerably well paved, and are lined with arcades. The cathedral and five other churches belong to the Greek Latin church; there are also many churches and chapels of the Greek communion, among which that of S. Spiridion is the principal. Corfu is the residence of the archbishop of the Greek Latin church, of the senate, the high court of appeal for all the islands, as well as the civil, criminal, and commercial courts for Corfu. The university, which was first opened by Lord Guilford as chancellor in 1824, has four faculties, theology, law, medicine, and philosophy, and fourteen professors. The lectures are given in modern Greek. There are also a secondary school or gymnasium, an ecclesiastical seminary, and several primary schools, all supported by the government, at the annual expense of 3483*l.* sterling; and a society for the improvement of agriculture and industry. There is an account of the system of instruction followed in the secondary schools of the Ionian Islands in *Journal of Education*, No. I. The harbour of Corfu, which is one of the best in the Levant, and has a depth of about 80 feet, is formed by the island of Vido, the rocks called Condilonisi, the Lazzeretto island, and the New Fort.

There being a great scarcity of spring water in Corfu, cistern water is commonly used, and in summer the water for drinking is brought on asses from the river Potamo, about a mile and a half from the town. The suburbs, called Castrati, S. Rocco, and Mandrachio, are considerable. The whole population of the town and suburbs is 15,800, 4000 of whom are Jews. (Neigebaur.) From the suburb of Castrati a walk of about a mile and a half in a southern direction leads to the small bay of Palæopolis, where Chrysopolis, the town of the Phæacians, is said to have stood. The shores of this bay are planted with myrtle, laurel, pomegranate, and orange trees, and are the favourite resort of the citizens. They are called the gardens of Alcinous. (Marmora, *Istoria di Corfu*, with plates of many fine coins of antient Corcyra.)

The other districts of the island are: 2°, Liapades, with the town of the same name, 2500 inhabitants; and Chorachiana, with 2000; besides several villages. 3°, Peretia, which comprises the north-eastern part of the island; the little town of the same name lies at the foot of Mount San Salvador, the highest in the island, having a convent on the summit. On the sea-coast, near the site of the old town of Cassiope, rises a village still called Cassopo. 4°, Agrafus occupies the north-western part, with the little town of the same name, and several hamlets. Twelve miles north-west of this part of the coast is the island of Fano, which lies about 50 miles from the nearest point of the coast of Otranto in Italy. The island is six miles round, barren, and inhabited by a few fishermen. 5°, Spagus, which lies south of the preceding, is the most fertile and populous in the island; it has two good natural harbonrs, San Nicolo and Affiona. On Cape S. Angelos is a monastery, which stands on the ruins of an old castle built in the thirteenth century by Michael duke of Corfu. 6°, Strongili, south of the canton of Corfu, has two small market-towns and several villages. 7°, Milichia, the southernmost canton, is fertile, and contains about 10,000 inhabitants. (Neigebaur, *Ionische Inseln.*)

The Phæacians, the oldest known inhabitants of the island, are mentioned by Homer as a numerous, thriving, and seafaring people; and he paints in pleasing colours their hospitable and primitive manners. (*Odyssey*, vi. vii.) According to some (Strabo, Casaub. 269), it was called Scheria, and was inhabited by the Liburni, when a Corinthian colony settled on the island, about the time when another colony under Archias founded Syracuse. The Corinthians built the town of Corcyra, which became also the name of the island. This colony rose to be the most powerful naval state of Greece, next to Athens. The Corcyræans having quarrelled with the Corinthians on the subject of Epidamnus [Colony], a war followed between the two states, which was a prelude to the great Peloponnesian war. Corcyra had at first the advantage, and defeated the Corinthian fleet off Actium; but the Corinthians being joined by other states of the Peloponnesus, the Corcyræans had recourse to Athens, which made a defensive alliance with them. The Corcyræan fleet of 110 triremes, besides ten Athenian auxiliary ships, engaged with the Corinthian fleet at the south entrance of the channel, near the coast of Thesprotia. The fight ended in favour of the Corinthians, but the appearance of a fresh Athenian squadron of twenty triremes induced them to return home. (Thucyd. i. 50-1.) After this, Corcyra was distracted by civil commotions between the aristocratic and democratic factions, the former being favourable to the Peloponnesian or Spartan alliance, and the latter to the Athenian. Atrocities were committed by both, which ended in a general massacre of the aristocratic party, connived at by the Athenian commander. (Thucyd. iv. 47-8.) This tragedy occurred B.C. 425. The island remained in the Athenian alliance till the end of the war.

The Illyrian pirates took Corcyra, as well as several towns on the coast of Epirus, about 220 B.C.; but the Romans under Caius Fulvius came with a fleet, defeated the Illyrians, and retook Corcyra, which from that time seems to have remained under the patronage of Rome. (Polybius ii. 1.) About 210 B.C., we find the consul Valerius Lævinus stationed at Corcyra with his fleet, giving assistance to the Ætolians in their wars against the Acarnanians. (Livy xxvi. 24.) Corcyra under the Romans was an important station for their fleet, and also a resting-place for those who went and came from Greece by way of Brundisium. It continued to belong to the eastern empire until the eleventh century of our æra, when Robert Guiscard, the Norman conqueror of Apulia, took the island. When the Latins took Constantinople, and established fiefs in the provinces, Corfu had its dukes, who were styled Despots of Epirus and Corfu. It fell afterwards under the Angevins of Naples, but the people revolted and called in the Venetians in 1386. Corfu remained under Venice till the end of the eighteenth century, notwithstanding repeated attacks of the Ottomans, the most remarkable of which was in 1714, when they besieged Corfu with 30,000 men, and made several assaults, but were repulsed by General Schulemburg, who commanded the garrison. The island was administered by Provveditori sent from Venice; but the internal or municipal administration was in the hands of the native nobles. The judicial system appears to have been bad, and murders were very frequent. When Bonaparte overthrew the Venetian senate, under pretence of establishing a popular government, the democrats who came into office at Venice sent commissioners to Corfu with orders to deliver the forts to their allies the French, who sent troops on board the Venetian men of war, and took possession of the island without opposition. In 1799 a united Russian and Turkish force wrested Corfu from the French, and in the following year the republic of the seven united Ionian islands was constituted under the protection of Russia and the Porte. By the peace of Tilsit Russia gave up the seven islands to the French, who sent garrisons from the coast of Naples. The English however took all the islands except Corfu, which was given up by France by the peace of Paris in 1814. The seven islands were then restored to their independence, and formed into a state under the protection of the king of Great Britain, represented by a lord high commissioner, who resides at Corfu.

The present constitution of the seven islands was proclaimed in January, 1818, under the sanction of Great Britain. The parliament or legislative assembly consists of forty members, eleven of whom have their seats *de jure*, consisting of the six members of the last senate, of the four regents of the larger islands going out of office, and one of the regents of the three smaller islands taken by turns. The other twenty-nine members are elected by the electoral bodies of the different islands, seven for each of the islands of Corfu, Cephalonia, and Zante, four for Santa Maura, and one for each of the other three islands, Cerigo, Ithaca, and Paxo. They are elected for five years, which is the term of duration for each parliament, unless it be dissolved before that period by the lord high commissioner. The members, as well as the electors, are all of the class of nobles, which is numerous, including almost all the landed proprietors. The qualifications requisite in order to be inscribed among the nobles are specified in the constitutional charter given by the Emperor Alexander in 1803, in conformity with the old usages of the country, by which the inhabitants were classed into three orders, nobles, burghers, and peasants. The burghers may become nobles on certain conditions. The peasants are free in their persons, but have no elective rights, and they are generally very poor.

The senate, which consists of a president and five members, all from the class of the nobles, forms the executive. The president, who has the title of highness, is appointed by the king of Great Britain: the other five members are chosen by the parliament, subject to the approbation of the lord high commissioner. The senators are elected for five years; the president is appointed for two years and a half: the senate appoints to all administrative offices and situations.

The lord high commissioner convokes the parliament once a year, and opens the session by a speech. He also prorogues or dissolves it. Bills are brought before the House, either from the senate, or from the lord high commissioner through the senate, or lastly, by any member of parliament. After passing the House of Parliament, the bills must be approved by the senate, and lastly must receive the sanction of the lord high commissioner.

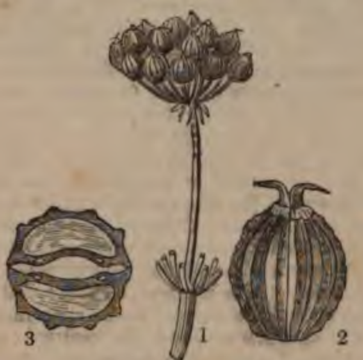
In every island there is a regent, or chief civil and political officer, appointed by the senate, and likewise a resident appointed by the lord high commissioner. There is also in each island a municipal council, named by the order of nobles; the regent is the ex-officio president of the council. In every island there are also civil, criminal, and commercial courts, the judges of which are appointed by the senate. A high court of appeal for all the islands, called the Supreme Court of Justice, sits at Corfu, and is composed of four judges, two appointed by the senate and two by the lord high commissioner, who may choose them indiscriminately among Ionian natives or British residents.

The lord high commissioner commands the armed force, which consists of a British establishment of about 3000 men, and four regiments of native militia.

The eastern Greek church is considered as the established religion of the state; but the Roman or Greco-Latin church enjoys equal protection. The archbishop and bishops of the established church are consecrated by the patriarch of Constantinople. (*Constitution of the Ionian Islands*, in Dufay's *Recueil de Constitutions*, &c.)

According to the printed official returns of 1833, the whole population of the seven islands was 107,379 males, and 90,588 female natives, besides 11,179 strangers. That of the island of Corfu was 32,909 male and 27,098 female natives, besides 9040 strangers. Of this population about 15,000 were employed in agriculture, 1621 in manufactures, and 1443 in commerce. There were on the island 4005 acres sown with wheat, about 16,500 acres sown with Indian corn, barley, oats, and other grain, 75,700 acres planted with olive trees, 13,900 with vines, about 1000 with pulse, 848 with flax, and 7422 in pasture, besides 33,272 acres uncultivated. There were on the island 4194 horses, 2341 horned cattle, 18,585 sheep, and 16,743 goats. The value of the exports for that year was 129,000*l.* sterling, and the imports were 83,000*l.* The shipping inwards was 254,000 tons, and the outwards 255,000, about one-half of it consisting of Ionian vessels. (*Tables of the Revenue, Population, &c., of the United Kingdom and its Colonies*, Supplement to Part IV.)

CORIA'NDRUM SATI'VUM or COMMON CORIANDER, is an annual umbelliferous plant, inhabiting the southern parts of Europe, and yielding a globular dry fruit, with slight carminative stomachic properties, and a powerful smell something like that of bugs. The leaves that grow next the root are nearly entire or gashed, and wedge-shaped; the stem-leaves have a bipinnatifid structure, and their segments are deeply divided; while the uppermost leaves are parted in many very narrow linear spreading segments. The flowers are pale pink, with no general involucre, but with partial ones, each of which consists of eight sharp linear leaflets. The fruit is globular, and will separate into two hemispheres, each of which has five very imperfect wavy primary ridges and four secondary straight elevated ones. There are no vittæ on the outside of the hemispheres, but two occur in their commissure.

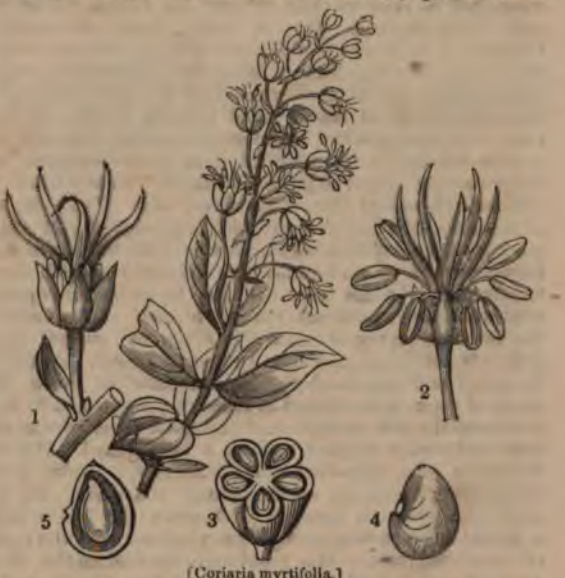


[Coriandrum sativum.]

1. A portion of an umbel, in fruit. 2. A fruit magnified. 3. A transverse section of the same.

Coriander fruit, or seeds as they are incorrectly called, are used in sweetmeats, in certain stomachic liqueurs, and in some countries in cookery; they are little esteemed in England.

CORIARIA'CEÆ, a very small natural order of gynobasic polypetalous exogens, with opposite or alternate exstipulate leaves, ten stamens with an hypogynous inser-



[Coriaria myrtifolia.]

1. A flower with its bract, the anthers not yet visible. 2. The same with the anthers projecting. 3. A cross section of the ovary. 4. A seed. 5. A vertical section of the same.

tion, and five distinct ovaries, with distinct spreading stigmas. The two genera, of which alone the order consits, are nearly allied to Rutaceæ, but their leaves are not dotted. The only plant that gives the order any interest is Coriaria myrtifolia, a shrub inhabiting the South of Europe, and employed by dyers for staining black. Its fruit is succulent and said to be poisonous.

CORINTH (Κόρινθος), a city of antient Greece, the capital of a small but wealthy and powerful district in the Peloponnesus. The Corinthian territory was bounded on the north by the Crisæan bay, on the north-east by Megaris, on the east by the Saronic bay, on the south by Argolis, and on the west by the territories of Sicyon. The city was built upon a level to the north of a steep and high mountain called the Acrocorinthus, which served as a citadel, and was included within the wall. (Strabo, Casaub., p. 379.) Corinth had two ports; the nearer, Lechæum, on the Crisæan bay, was connected with the city by two parallel walls, which were partially destroyed by the Lacedæmonians, B.C. 393. (Xenoph. *Hellen.* iv. 4, § 13.) This harbour, which Colonel Leake conceives to have been for the most part artificial, is now nearly filled up; all that remains of it is a lagoon near the supposed site. (Leake's *Morea*, iii., p. 234.) The other port, Cenchreiæ, on the Saronic bay, does not appear to have been connected with the city; it was, however, a more considerable place than Lechæum, and contained several temples. (Pausan. ii. 2.) A few miles to the north of Cenchreiæ was a small bay, called Schœnus. Here was the narrowest part of the isthmus, and a kind of canal called the Diholcus, of which there are still some remains, was carried from the harbour of Schœnus to the eastern extremity of Port Lechæum, and ships were run ashore at one of these points and dragged to the other sea. This work existed in the time of Aristophanes (*Thesmophor.* 645); but in the Peloponnesian War it appears that they had a method of transferring naval operations from the Crisæan to the Saronic bay without dragging their ships across the isthmus. (Thucyd. ii. 93.) A little to the south of the Diholcus was a wall, which was always guarded when any danger threatened the Peloponnese.

The old name of Corinth was Ephyra; and under this name it was one of the seats of the Æolian race. Even in the time of Homer it was called 'the wealthy' (*Iliad*, ii. 570), an epithet which it acquired, according to Thucydides (i. 13), from the commercial spirit of its inhabitants, occasioned by the favourable situation of the town, which threw all the inland carrying trade of Greece into its power; while the difficulty of weathering Cape Maleæ (which was proverbial) made it the emporium of most of the trade between Asia and Italy. (Strabo, p. 378.)

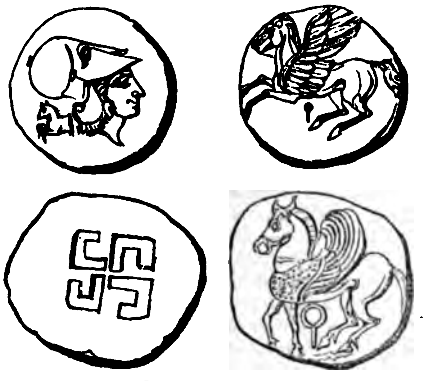
About thirty years after the Dorian invasion of the Peloponnese (*i. e.* about 1074 B.C.), Ephyra fell into the power of Aletes, the son of Hippotes, a Heracleid, who had slain a soothsayer on the passage from Naupactus, and had been compelled to separate himself and his followers from the army of the Dorians. The city then assumed the name of Corinth, or the Corinth of Jupiter (Müller, *Dorians*, book i. ch. 5, § 8); and the Æolian inhabitants became a subject class, though not altogether deprived of their civic rights. The descendants of Aletes ruled Corinth for five generations with royal power; but at length a rigid oligarchy was substituted for the monarchical form of government, and the power was vested in prytanes chosen annually from the powerful Heracleid clan of the Bacchiadæ. The members of this clan intermarried only with one another, and consequently kept aloof from all immediate intercourse with their fellow-citizens, whom besides they did not treat with much forbearance. In the year 660 B.C. Cypselus, an opulent citizen of Æolian descent, putting himself at the head of the lower orders, overthrew the oligarchy without much difficulty, and assumed the sovereign power. Although he taxed and oppressed the Dorian caste so much that many of them were obliged to emigrate, he seemed to have possessed the full confidence of the great mass of the citizens, and always reigned without a body-guard. His son Periander, who succeeded to his authority, occupies a very prominent place in the ancient history of Greece. He was much more despotic than his predecessor; he had a body-guard of 300 men, and trampled at pleasure upon the rights of his countrymen. His reputation for wisdom (by which we must understand that practical wisdom which consists in governing men) procured him a place among the seven sages of Greece. Upon his death in 579 B.C., his power devolved to one of his relatives, Psammetichus, the son of Gordias, who after three years was deposed by the Lacedæmonians. The former constitution was then restored, but doubtless much modified, and Corinth remained an oligarchical state till the beginning of the fourth century B.C. In the Peloponnesian War, which was in some measure brought about by them, the Corinthians were staunch supporters of the Lacedæmonians, and the bitterest enemies of Athens. About 394 B.C. a democratical faction endeavoured to upset the aristocracy, and to unite Corinth with Argos, but without any permanent success. (Xenoph. *Hellen.* iv. 4.) Timophanes re-established the monarchical form of government by means of the mercenaries which he commanded; but he was soon removed by assassination. (Aristot. *Polit.* v. 6; Corn. Nepos, *Timol.*, c. i.; Plutarch, *Timol.* iv.) Like the other states of Greece, Corinth felt the influence of the Macedonian power, and was garrisoned by Macedonians under Antigonus, but liberated by Aratus (Pausan. ii. c. 8, § 4.) The Corinthians took the lead in the Achæan confederacy, and were at first allies of the Romans (Pausan. vii. c. 8, § 3); but at last the temptations held out by the wealth of the place, and the pretext furnished by some insults which the Corinthians had offered to the Roman embassy (Strabo, p. 381), led to the destruction and plunder of the town by L. Mummius, in 146 B.C., according to an express decree of the Roman senate. (Liv. *Epit.* lii.) Many works of art were destroyed, but some of the finest pictures and statues were removed to Rome, and contributed to encourage a taste for the fine arts in Italy. (Strabo, p. 381.) Corinth was restored by Julius Cæsar about 100 years after its conquest by Mummius, and peopled with freedmen, who enjoyed the privileges of a Colonia. When Pausanias visited Corinth in the second century of our æra, there were still many fine buildings, and other monuments of the former splendour of the city. (Pausan. ii. c. 1, § 7.) There now remains little but the ruins of a Doric temple, probably the oldest existing specimen of that style.

The colonies of Corinth were very numerous; but, as has been justly remarked by Müller (*Dorians*, i., c. 6, § 7), they were all sent out from Lechæum, and confined to seas west of the isthmus. The most celebrated were Syracuse and Corcyra. Potidæa, in Pallene, however, is an exception to Müller's remark.

Its wealth and the confluence of merchants from all parts favoured everything which ministered to the gratification of the senses; and both architecture and the other fine arts were, according to the testimony of the ancients, successfully cultivated in this wealthy emporium. (Pindar, *Olymp.* xiii., 25—31.)

The Corinthian territory is fertile and well watered. The fountain Peirene, on the Acrocorinthus, was celebrated by the poets (Strabo, p. 379); but in the time of Hadrian, the inhabitants were so little satisfied with the springs in the town, that they induced the emperor to supply them with water from the Stymphalus by means of an aqueduct twenty miles long. The modern name Gortho is merely an abbreviation of the ancient name of the city. (Leake's *Morea*, iii. p. 262.)

According to the fable Bellerophon caught the winged horse, Pegasus, while drinking at the fountain of Peirene. The Pegasus appears on the coins of Corinth and some of its colonies.



[Coins of Corinth.]

British Museum. Actual Size. Silver. Weight, old coin, 131 grains; the other, 132 grains.

CORINTHIAN ORDER. [Civil Architecture; Column.]

CORINTHIANS, ST. PAUL'S TWO EPISTLES TO THE. The First Epistle of St. Paul to the Gentile and Jewish converts to Christianity in the city of Corinth is generally considered by the commentators and critics to have been written A.D. 57 or 58. Of this opinion are Michaelis, Mill, Whitby, Pearson, Benson, Paley, Adam Clarke, Greswell, &c.; but the date assigned to it by Beausobre, L'Enfant, and Lardner is A.D. 56. The place from which it was written is stated in the concluding postscript to be Philippi, which, as it apparently contradicts the apostle's statement in verse 8, 'I shall remain in *Ephesus* until Pentecost' (*ἐπιμενῶ δὲ ἐν Ἐφέσῳ*), the latter place is commonly given as the more probable; especially as these postscripts appear to be in other instances erroneous, and without authority. In order to perceive the design of these epistles, it is necessary to observe the following circumstantial facts which gave occasion to the writing of them:—Christianity was first preached at Corinth by St. Paul, who resided there about eighteen months, between A.D. 51 and 53. His successors were Apollos, Aquila, and Sosthenes. But shortly after his departure several other learned and eloquent teachers of Christianity drew away most of the Christian converts from the Gospel doctrine as set forth by St. Paul, and formed them principally into two separate parties, the one contending for the rigid observance of the Jewish ritual, the other for indulgence in some of the idolatrous and lascivious customs of the worship of Venus, to whom a magnificent temple, containing a thousand prostitutes (Strabo, Casaub., 378), was dedicated in the centre of this great commercial city, which bore a proverbial character for luxury and licentiousness. Some writers conjecture that the Judaizing preachers of the Gospel in Corinth were some of the twelve apostles: since Paul asserts that on this question he withstood Peter to the face, and (2 Cor. xi. 22, 23) he speaks of these teachers as Hebrews and ministers of Christ. On being apprised of this condition of the Corinthian church, St. Paul wrote his first epistle, the contents of which may be considered under two general heads: first, the reproval of abuses and corruptions which disgraced the Christian community of Corinth; secondly, the reply to various questions, for the decision of which the Corinthians had appealed to the judgment of their apostle. After commencing with the usual salutation, he proceeds therefore to rebuke their schisms and assumption of knowledge and wisdom; exhorting them to become united to himself, as having a prior claim to their respect and attention (c. i. to iv.). He next reproves them for not having delivered unto Satan one who had his father's wife (c. v.); for not suffering themselves to be defrauded rather than go to law; and especially for their indulgence in fornication (c. vi.). Then follow answers to the questions, in which instructions are given concerning marriage, celibacy of virgins and widows, the eating of idolatrous sacrifices, the exercise of supernatural gifts, the proprieties to be observed by public preachers, and the forbidding women to address congregations (c. viii. to xiv.). A censure is passed upon the profane observance of the Lord's Supper, for in eating it, each before another took his own supper, so that while one was hungry another was drunk (*ἕκαστος γὰρ τὸ ἴδιον δεῖπνον προλαμβάνει ἐν τῷ φαγεῖν· καὶ ὃς μὲν πεινᾷ, ὃς δὲ μεθύει*) c. xi. 21. From c. xv. 12, it appears that it was taught among the Christians of Corinth that there is no resurrection of the dead. St. Paul thence takes occasion to expatiate upon the subject to the end of this chapter, which forms the most imposing part of the Church of England Burial Service. The epistle closes with an exhortation to the Corinthians to secure the collection of money for the necessitous saints in Judæa, both hearers and preachers, which is several times enforced with various arguments, especially in c. ix. and xvi., and in c. viii. and ix. of the second epistle, of which we now come to speak. It is generally agreed that it was written A.D. 58, about a year after the first, and from Philippi, as the postscript asserts. The main purpose of St. Paul in this epistle was to repel the imputations which it appears his first epistle had induced the opponent teachers to make, both as to his doctrines, authority, and personal appearance. It is in fact an apologetic oration, in which the apostle enlarges on his spiritual office, power, and qualifications; and speaks of his supernatural revelations, as far exceeding the pretensions of his rivals at Corinth, whom he designates 'false apostles, deceitful workers, and ministers of Satan,' xi. 13. He explains at length the cause of his not having visited the Corinthians as he promised, declares his great success in preaching, mentions his numerous sufferings and disasters incurred for the sake of the faithful, enforces the necessity of completing the contribution for the saints, and concludes with a farewell salutation.

The great rhetorical merits of this address are critically discussed in the 'Disputatio Inauguralis de alterâ Pauli ad Corinthios Epistolâ,' by M. Royards, 8vo., 1818. All the passages in the fathers of the first three centuries which contain any citation from, or allusion to, these two epistles of St. Paul, are collected in the 2nd vol. of Dr. Lardner's Credibility. The words in the first epistle, *Ἔγραψα ὑμῖν ἐν τῇ ἐπιστολῇ* (c. v. 9), have been the subject of great controversy, as implying that another epistle, not now extant, was written before the one which is called the first. A long list of the critics and divines who have given opinions about it, may be found in Horne's Introduc., vol. iv. p. 353. Numerous critical particulars may be found in the following works:—Michaelis, Introduction to the New Testament, by Bishop Marsh, vol. iv. p. 42-74; Eichhorn, Einleitung in das Neue Test., vol. iii. pp. 91-201; Macknight on the Epistles; Horne's Introduction, vol. iv., pp. 349-357, and 603; Greswell, Harmony of Gospels, vol. ii., pp. 33-38; Paley's Horæ Paulinæ, pp. 66-98; Critical Commentaries by Piscator, Rollock, Schlater, and others, are enumerated in Watts' Bibliotheca, where a very copious list is given of sermons on texts from these epistles, both which were first printed separately from the Testament by Melancthon at Wittenberg in 1521.

CORIOLA'NUS, CNÆUS MA'RCIUS, the hero of an antient Roman legend, belonging to the latter half of the third century of the city. Dionysius calls him Caius, but Dion and most of the MSS. of Livy are in favour of Cnæus. (Niebuhr's *Hist. of Rome*, vol. ii., p. 234, *Eng. Transl.*) The surname Coriolanus was supposed, in later times, to have been derived from his conquest of Corioli, but it probably arose in the same way as a multitude of other Roman surnames, such as Sabinus, Auruncus, Viscellius, &c., which only indicate the origin of the houses that bore them. A similar connexion might no doubt be satisfactorily traced in many more cases if the names of the towns remained to justify our conclusions. (Niebuhr, vol. ii., p. 242.) The story of Coriolanus, as given by the Roman historians, is so completely poetical in its form, and so rhetorical in its details, that Niebuhr (p. 242) is of opinion that almost the whole of it must be excluded from history. The tale however runs as follows:—

Coriolanus was in the Roman camp when the consul Cominius was laying siege to Corioli. The besieged making a vigorous sally, succeeded in driving back the Romans to their camp; but Coriolanus immediately rallied them, rushed through the gates, and took the place. Meanwhile the Antiates had come to relieve the town, and were on the point of engaging with the consul's army, when Coriolanus commenced the battle, and soon completely defeated them. From this time he was greatly admired for his warlike abilities, but his haughty demeanour gave considerable offence to the commonalty. Not long afterwards, his implacable anger was excited by being refused the consulship; and when, on occasion of a severe famine in the city, corn was at last brought from Sicily (some purchased and some given by a Greek prince), and a debate arose whether it should be given gratis or sold to the plebs, Coriolanus strenuously advised that it should be sold. The people in their fury would have torn him to pieces had not the tribunes summoned him to take his trial. He was banished by a majority of the tribes, and retired to Antium, the chief town of the Volsci, where the king, Attius Tullus, received him with great hospitality. Coriolanus promised the Volsci his aid in their war against Rome, and they forthwith granted him the highest civil honours, and appointed him their general. He attacked and took many towns; among others Circeii, Satricum, Longula, and Lavinium. At last he directed his march to Rome itself, and pitched his camp only a few miles from the city, where he dictated the terms at which the Romans might purchase a cessation of hostilities. Among other things he demanded that the land taken from the Volsci should be restored, that the colonies settled there should be recalled, and that the whole people should be received as allies and citizens with equal rights; and that all those who had enlisted themselves under his banners should be recalled as well as himself. Coriolanus allowed them two terms, one of thirty and the other of three days, for making up their minds. After thirty days had expired, a deputation of four leading senators came before his tribunal, but were repulsed with threats if they should again offer anything but unreserved submission.

On the second day the whole body of priests and augurs came in their official garb and implored him, but in vain. On the third and last day which he had allowed them he intended to lead his army against the city, but another expedient was tried, and succeeded. The noblest matrons of the city, led by Veturia, the mother of Coriolanus, and his wife Volumnia, who held her little children by the hand, came to his tent. Their lamentations at last prevailed on his almost unbending resolution, and, addressing his mother, he said with a flood of tears, 'take then thy country instead of me, since this is thy choice.' The embassy departed; and dismissing his forces, he returned and lived among the Volcsi to a great age. According to another account he was murdered by some of the Volsci, who were indignant at his withdrawing from the attack.

After his death however the Roman women wore mourning for him as they had done for some former heroes. The public gratitude for the patriotic services of Volumnia were acknowledged by a temple, which was erected to Female Fortune. Shakspeare has founded his play of 'Coriolanus' on certain parts of the legend.

(Dionysius Halicarnassensis, viii.; Plutarch, *Life of Coriolanus;* Livius ii., 33—40; Florus i., 11: Niebuhr's *Hist. of Rome*, vol. ii., pp. 234—243.)

CORK, botanically considered, is the soft elastic bark of a kind of oak inhabiting Spain and Portugal. [QUERCUS.] The bark of all trees consists of a parenchymatous or soft cellular substance, and of a harder ligneous tubular tissue: in most species the latter is most abundant; in the cork the former constitutes the mass of the bark, and hence its elasticity and the facility with which it is cut in all directions. When however it is first generated, the bark of the cork-tree is far less elastic than it becomes subsequently; which is owing to its consisting in the first instance of a large proportion of woody matter. When the latter is once formed, which takes place in the first year of its growth, it never increases, however long the bark may remain in a living state; but the parenchymatous substance will go on growing as long as the bark is alive, a provision of nature connected with the annual increase in diameter of wood and the necessity of the bark giving way to the pressure from within. If the growth of the parenchyma is prolonged and rapid, a corky substance is the necessary consequence, as in certain kinds of elms, the common oak itself, and many other trees; but it does not occur in any European tree in such excess as in the cork. As soon as the bark dies, it of course ceases to grow, and then, not distending as it is pressed upon from within, it falls off in flakes which correspond to the layers that are formed annually. These flakes are the layers of cork which the Spaniards collect under the name of the outer bark, while the inner living bark is or rather should be spared. We are told, however, by Captain S. Cook, that recently the Spaniards have committed the inconceivable absurdity of stripping off the inner bark also, although it is of no value except for tanning, and although its removal of course destroys the trees. The same intelligent observer states that the cork-tree occurs in Spain throughout the whole extent of the Tierra Caliente, but is most abundant in Catalonia and Valencia, whence the principal exports have been made. Cork appears to be a corruption of the Latin word *cortex*.

CORK TRADE. [BARK.]

CORK, a maritime county of the province of Munster in Ireland, bounded on the north by the counties of Limerick and Tipperary, on the east by the county of Waterford, on the south by the Atlantic Ocean, and on the west by the county of Kerry. It lies between 51° 27′ and 52° 13′ N. lat., nearly under the same parallels with South Wales, and is by much the largest county in Ireland. Its greatest length from Youghall on the east to the mouth of the Kenmare river on the west, is 93 Irish or 110 English miles; and its greatest breadth from the Old Head of Kinsale upon the south to Charleville on the north, is 44 Irish or 56 English miles.* The area is estimated at 2654½ square statute miles, or 1,698,882 English acres; but this estimate is not to be depended on for accuracy: the indentations of the coast from Youghall to Kenmare give a coast-line of about 200 miles. Population in 1821, 629,786; in 1831, 703,716.

The chief mountain groups, which with bogs and unprofitable lands occupy upwards of two-ninths of the entire surface, may be considered as offsets of the main ridge which separates Cork from Kerry. This ridge, the southern extremity of which separates Bantry Bay from the river of Kenmare, runs N.N.E. and S.S.W., and on the side towards Cork sends off numerous lateral elevations. Of these the two chief are the ranges north and south of the valley of the Lee, which river divides the county into two nearly equal portions. The northern range, which is by much the more extensive, consists of the almost continuous groups of the Muskerry, Boggra, and Nagles mountains, and stretches in a uniform direction from the Kerry boundary on one side of the county, to within a few miles of the borders of Waterford on the other. The Shehy group, which forms the southern boundary of the basin of the Lee, runs a much shorter distance from the main ridge; but the upland country of Kinalmeaky, into which it subsides, prolongs the elevation in a line parallel to the direction of the Boggra range across the entire extent of the county, from Dunmanway on the west to the high grounds above Cork and Passage on the east. North and south of this central valley are the districts which form the basins of the Blackwater and the Bandon; the former included between the mountains of Limerick and Tipperary, and the Boggra groups; and the latter between the Shehy range and those elevations which rise southward towards the sea-coast. These three principal valleys are nearly symmetrically situated, and their respective rivers run very nearly parallel to one another, their general course being from west to east: all have their rise among the eastern declivities of the Kerry ridge, and each, as it approaches the termination of its course, takes a southward direction for some miles before entering the sea. In like manner each is naturally navigable throughout this latter portion of its course, as the Blackwater from Youghall at its mouth to Cappoquin; the Lee from the sea to Cork; and the Bandon from Kinsale at its mouth to Inishonan. The Blackwater is by much the largest river of the three, and drains a proportionately greater extent of country. The bogs and waste lands lie among the mountain groups described; the remainder of the county is well tilled and productive, particularly along the banks of the rivers enumerated, and in the districts included between their embouchures.

Beginning from the east, the harbour of Youghall has a tolerable anchorage in six fathoms water without the bar, where vessels may wait the tide, which gives twenty feet of water on the bar at neaps. Three leagues south is a good anchorage and fishing ground, in five to twelve fathoms water at Ring Point. From this the coast is rocky, with the exception of the extensive strand of Ballycotton Bay, to the entrance of Cork harbour four leagues farther west. This harbour is so commodious, says Smith, that it will admit the largest vessels at any time of the tide without striking sail, and has a land-locked anchorage in ten fathoms water in some places, and in seven fathoms' water within a cable's length of the shore. On the shoalest part of the bar are thirty feet water at ebb-tide. From this westward to Kinsale harbour the coast is rocky and dangerous. The harbour of Kinsale has thirty feet of water on the bar, and anchorage within in seven fathoms; but it is not so capacious as that of Cork. There is also good anchorage in any depth of water on both sides of the promontory to the west called the Old Head of Kinsale. The bay of Courtmasherry, next west, is fit for vessels of 200 tons, but exposed. Cloghnakilty harbour is encumbered with a bar, on which are only two fathoms' water at full sea, and vessels embayed here are in considerable danger. The harbour of Glandore has fourteen to thirty feet of water in its channel, and a land-locked anchorage. Castlehaven Creek has safe anchorage in fourteen feet; and Baltimore Bay pretty good in six fathoms. Baltimore is situated on the eastern side of an extensive bay, bounded on the east by Cape Clear Island, and on the west by Mizen Head: it contains the several minor bays of Baltimore, Roaring Water, Crookhaven and Inisherkin, in all of which merchant vessels may find anchorage. West from Mizen Head the bay of Dunmanus runs inland twelve miles in a north-east direction, with ten to thirty fathoms of water throughout, and no bar; but it is little frequented, in consequence of the contiguity of Bantry Bay, from which it is separated by the narrow mountainous promontory terminating in Minterbana or Sheep's Head. Bantry Bay is forty fathoms deep at the mouth, twenty-six miles long, and from three to five miles broad. Bear Island at its entrance protects it from the south-westerly swell, and affords the land-locked anchorage of Bearhaven in ten to sixteen fathoms' water, for an unlimited number of vessels. Further up, Whiddy Island incloses the minor bays of Bantry and Glengariff, the latter much celebrated for the magnificence of its scenery: it is calculated that all the shipping of Europe could ride secure in this noble harbour. Bearhaven has been proposed as a station for packet-ships to North America, in connexion with the projected south-western line of rail-road from Dublin.

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* These measurements are given from Smith. Doctor Beaufort makes the length 78 Irish or 99 English miles; and the breadth 56 Irish or 71½ English miles.

Facilities for water-carriage are confined to the coast: the inland navigation of the Bandon is very inconsiderable; that portion of the Blackwater which is navigable lies in the county of Waterford; and the traffic between Cork and the sea is more a harbour than a river navigation. It has been proposed to render the Bandon navigable, from Dunmanway, near its source, to Inishonan; also the Blackwater, from Mallow to Cappoquin; but neither design has been practically attempted. The only lakes in the county are two small but very picturesque sheets of water, near the source of the Lee, and some pools on the coast.

The road to Dublin, carried over the eastern flank of the Nagles mountains by Rathcormack, unites the valleys of the Lee and the Blackwater from Cork to Fermoy. The road from Cork to Mallow, carried over the western flank of the same range, forms another line of communication between these valleys, and is used as the post-line to Limerick. Westward from Mallow to Millstreet, a distance of nearly eighteen miles, the range of the Boggra mountains formed an impassable barrier, until, in 1823, permission was obtained from government to make a road through the centre of this group at an expense of about 10,000*l.*, one-half to be levied by county presentments, and the other half to be defrayed out of the Consolidated Fund. This road has now been open for several years, and saves the inhabitants of the valley of the Blackwater a distance of fully twenty miles Irish on every journey to and from the Cork market. It also supplies an easy means of transit for fuel to the low countries, both north and south. Before this road was opened, the only means of procuring fuel from the upland bogs was on the backs of small horses, or of men and women. Other new roads have been made at the public expense within the county in the neighbourhoods of Cloghnakilty, Bandon, Skibbereen and Courtmasherry. Prior to the year 1829, a great part of the north-western district of the county was almost inaccessible. This district formed part of a tract of 970 square miles, comprised between the Shannon and the Blackwater, which up to the year 1822 had contained no road passable for horsemen in wet weather. 'The entire district must have remained neglected by the hand of civilization from the period at which its antient proprietors, the later Earls of Desmond, had been dispossessed of it in the reign of Elizabeth.' (*Report on the Crown Lands of Poble O'Keefe*, 22 *March*, 1831.) The whole district contained but two resident landed proprietors, whose houses were distant 38½ miles from one another. The inhabitants were poor and ignorant, and the inaccessible nature of the country made it the asylum of smugglers and outlaws. Through the northern parts of this district seventy-five miles of good road were made by government in the years 1823—9. The consequences were an immediate increase of industry and produce, and a very rapid improvement in morals and intelligence. Still there remained the southern portion of the district, comprising 128,000 acres in the north-west of Cork through which no road had yet been carried. To open up this tract, a road was projected in 1829, from Castle Island in the county of Kerry eastward, so as to meet the lately-constructed Boggra road at its terminus on the Blackwater, by which a communication would be opened between Castle Island and Mallow, which would shorten the distance from the former town to Cork by twenty-two miles. A second line, connecting this road with the post-line from Cork to Killarney, was also projected, by means of which Killarney would have a direct communication through Mallow with Waterford. About the same time, a tract of 9000 acres in the heart of the unopened district escheated to the crown. Possession being obtained of 5000 acres, the attention of government was, in January, 1831, directed to the best means of improving the wretched tenantry found occupying the estate. It was found that the projected road from Castle Island would cross the head of the Blackwater within the estate, and that the vicinity of the ridge would be an eligible site for a village. The village of King William's Town has accordingly been built under the superintendence of Mr. Griffith: it consists of a carman's inn, a model farm-house, a few suitable houses for shopkeepers, artisans, and labourers, and a large school-house. The estate, which, on its reversion, 'was saturated with water, and covered with thick matted beds of moss, rushes, and heath, the growth of ages,' unfenced, unmanured, and inaccessible, is now to a great extent drained and divided into well-fenced farms for grazing and tillage, to which the newly-opened road affords a ready supply of lime for manure, as well as a convenient means for carriage of produce to market. The condition of the tenantry is rapidly improving, and there is every prospect of complete success attending these benevolent exertions of the government. Up to the 12th February, 1833, the amount granted by the Treasury for the improvement of these estates was 6500*l.* The estimate for the Castle Island and Mallow, and Killarney and Mallow roads, was 23,812*l.* 1*s.* 2*d.*: of this amount government defrayed 17,000*l.* A sum has also been advanced by the present Board of Works, for the construction of a new road from Glengariff to Killarney, across the ridge of the Bantry mountains. The remaining roads of the county are under the control of the Grand Jury. A rail-road has been projected from Cork to Passage, where there is a much frequented ferry between the mainland and Cove.

The climate is moist but genial in the south and east. The annual average of rain at Cork for the eleven years preceding 1748 was 38·26 inches. The wind blows between south and north-west for more than three-fourths of the year.

From the east of Limerick and south of Tipperary the limestone field extends towards the Blackwater, which it skirts for a part of its course on both sides between Mallow and Fermoy, until overlaid by the shale and sandstone beds of the Munster coal district, which occupy the whole extent of the uncultivated country described above. The limestone again occurs in stripes along the valley of the Lee, and occupies the basin on which the city of Cork is built, from which it stretches eastward in two parallel belts across the low sandstone country to the banks of the Blackwater. The Boggra and Nagles ranges consist of sandstone, which rock prevails throughout the district watered by the Lee. South of the Lee, the slate-clay, on which the sandstone rests, crops out in longitudinal strata that have a uniform direction from N.N.E. to S.S.W. and a prevalent dip to the S.E. This rock, varying from the hardest grit to clayey rubble, constitutes the whole of the southern portion of the county from the mouth of the Lee to the mountains of Bear and Bantry, where its elevations attain an altitude of above 2500 feet. Among these are some peaks of quartz formation, of which the most remarkable is Sugarloaf-hill, which rises over the bay of Glengariff. The veins, which occupy many of the fissures of this rock, abound in ores of iron, copper, lead, and manganese.

The soil of the coal district on the north-west is cold, stiff, and moory. In the north-east, where limestone abounds, it is warm and friable. Along the valley of the Lee is a red, crumbly, and heavy soil, which requires considerable manuring with lime or sea sand. Throughout the schistose formations, south of the valley of the Lee, the earth is generally dry and sandy, requiring much dung to make it bear corn. Marl, fullers' earth, and clay for brick kilns and potteries, are found in considerable abundance. The best cultivated parts of the county are the eastern portions of the basins of the Blackwater and the Lee, and the low district included between their embouchures. The system of agriculture in these districts is good. There is a large resident proprietary, and every evidence of wealth and comfort. The remainder of the county, except in the neighbourhood of towns and gentlemen's demesnes, presents a strong contrast. The extreme west is barren from one extremity of the boundary line to the other. The transverse ranges of moorland and bog are totally unreclaimed, and the population on their borders are poor and ignorant. The county is, nevertheless, improving: this improvement is mainly attributable to the construction of roads by the government.

The county comprehends 22 baronies, one county of a city and sundry corporate districts. Duhallow, Orrery and Kilmore, Fermoy, Condons and Clongibbons, occupy the district of the Blackwater, enumerating from west to east. West Muskerry, East Muskerry, Barretts, Barrymore, Kilnatalloon, and Imokilly, occupy the district of the Lee in the same order. Bear, Bantry, West Carberry, west and east divisions, East Carberry, west and east divisions; Ibaune and Barryroe, Courcies, Kinnalmeaky, Kinnalea, Kinsale, and Kerrycurrihy, occupy the remainder of the county in like manner on the south.

To these are to be added the county of the city of Cork, and the liberties of Youghall and Mallow. Other corporate towns have liberties, but not extensive enough to come under this division.

Cork county lies within the dioceses of Cork, Cloyne, Ross, and, to a small extent, in Ardfert and Aghadoe, and contained, in 1792, 269 parishes and 105 churches.

The county was formerly represented by 26 members in the Irish parliament, of whom two were returned by the county, and a like number by the city of Cork and each of the following boroughs: Kinsale, Youghall, Bandon, Mallow, Doneraile, Rathcormack, Middleton, Charleville, Castlemartyr, Baltimore and Cloghnakilty. These, with the exception of Doneraile and Rathcormack, still possess charters of incorporation, and are governed by corporate authorities.

With the exception of Cork, Bandon, and Youghall, these boroughs, at the time of the Union, lost their privilege of representation. The representation in the imperial parliament is now confined to two members for the county, two for the city of Cork, one for Bandon, and one for Youghall. The total amount of Union compensations was 150,000*l.* The other places of importance in the county are Bantry (population 4275); Cove (pop. 6966); Dunmanway (pop. 2738); Skibbereen (pop. 4430); Mitchelstown (pop. 3545); Fermoy (pop. 2557); Kanturk (pop. 1349); Newmarket (pop. 1437); Cloyne (pop. 2227); Millstreet (pop. 1935); Macroom (pop. 2058); Buttevant (pop. 1536).

The principal copper-mines in Ireland are situated at Allahies, about ten miles west of Skibbereen. They were first worked in 1814, and now give employment to about 1500 people. The ore contains from 55 to 65 per cent. of copper. In the same neighbourhood the ashes of a bog impregnated with copper yielded a considerable return until burned out. A deposit of manganese is worked with good profit. on the same coast. Veins of sulphate of barytes occur in the neighbourhood of Bantry, and specimens of asbestos have been procured at Bearhaven. The coal of the district of the Blackwater is anthracite or blind coal. The chief workings are at Clonbannon and Dromagh, near the crown estate, where there is a good home consumption at the distilleries in the neighbourhood. The district is, however, still too inaccessible to encourage extensive operations. There is abundance of iron ore, if coal could be had for smelting. While the county was well wooded iron works were carried on to a considerable extent. The East India Company had iron works on the Bandon in 1612, and paid 7000*l.* for a tract of wood for their furnaces. About the year 1632, the Earl of Cork had in his various bloomeries 1000 tons of bar and 20,000 tons of pig iron; besides 200 tons drawn out and faggotted into rods. Bar-iron was at that time worth 18*l.* per ton.

The export of produce is the principal trade: 30,000 firkins of butter, value about 50,000*l.*, are annually brought to market from the western district; but a considerable part of this is supplied from the borders of Kerry and Limerick. The following abstract exhibits the quantities of grain sold at some of the principal market towns in the year 1835:—

	Barrels of Wheat of 20 stone.	Barrels of Barley of 16 stone.	Barrels of Oats of 14 stone.
Cork . . .	82,838	64,294	130,826
Bantry . . .	8,453	200	3,421
Macroom .	3,263	—	12,000
Dunmanway	9,741	578	—
Fermoy . .	56,330	12,360	34,384
Mitchelstown	—	1,250	3,429
Kanturk .	8,900	100	550
Kinsale . .	—	1,320	—
Middleton .	12,493	30,225	7,306

No returns from Skibbereen, Cloghnakilty, Bandon, Mallow, Charleville, and Youghall.

The linen and woollen manufactures at one time flourished in several towns of this county; but trade in these branches has for many years back been languishing.

TABLE OF POPULATION.

Date.	How ascertained.	No of houses.	Families.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	Families not included in preceding classes.	Males.	Females.	Total.
1792	Estimated by Dr. Beaufort	68,639	..	..	..	..	..	..	343,000
1813	Under Act of 1812 . .	91,447	..	..	..	..	..	..	523,936
1821	Under Act 55 G. III., c. 120	103,279	115,959	..	..	..	314,172	315,614	629,786
1831	Under Act 1 Wm. IV., c. 19	106,893	118,356	81,623	16,531	20,212	348,402	355,314	703,716

Cork is the assize town. The county gaol, about three-quarters of a mile from the city, is considered the most perfect institution of the kind in Ireland. There are seventeen bridewells in the other principal towns. Quarter sessions are held twice a year at Bandon, and once at Skibbereen and Bantry respectively. The number of the constabulary in the county of Cork, on the 1st January, 1836, was 15 chief constables, 85 constables, 426 subconstables, and 17 horse do.: total expence for 1835, 19,807*l.* 15*s.* 5*d.*, of which 9334*l.* 12*s.* was chargeable against the county.

Before the coming of the English, Cork was a separate kingdom, of which the princes were the Mac-Carthys. The antient kingdom of Cork included, besides the present county, a considerable tract in Kerry and Limerick. It was divided into Desmond, or South Munster, on the west; Muskerry, a part of Ormond, or West Munster, on the north-east, and Carbery on the south-west. In all these districts the Mac-Carthys were the most powerful. The native families next in importance were, in Desmond, the O'Sullivans; in Carbery, the O'Donovans, and O'Driscols; and in Muskerry, the O'Learys on the south-west; the O'Lehans (from whom Castle Lyons) on the south-east, the Mac-Donohgs on the north-west, and the O'Keefes on the north-east. In 1172 Dermod Mac-Carthy, king of Cork, swore fealty to King Henry II., but he broke his engagements ten years afterwards by falling on the English under Raymond Le Gross by land, while his ally, Gilbert, son of Targesius, with a fleet of 35 sail from Cork, attacked Earl Strongbow by sea at Dungarvan. His kingdom, thus forfeited, was bestowed by King Henry, in 1177, on Robert Fitz-Stephen and Milo de Cogan. The city of Cork with the cantred adjoining was reserved to the king. Of the thirty-one cantreds conveyed by the king's grant, Cogan and Fitz-Stephen obtained possession of seven, lying near the city, which they divided, the three eastward cantreds falling to Fitz-Stephen's lot and the four westward to Cogan's. On the remaining 24 cantreds they levied rents from the native princes. Fitz-Stephen dying without issue, his grant went chiefly to the families of Barry and Roche. Cogan's share falling ultimately to coheiresses, was divided among Robert de Carew, Patrick de Courcey, and Maurice Fitz Thomas (Fitz John Fitz Thomas Fitz-Gerald), who was created earl of Desmond in 1329. The estates of this last family were further increased by large grants from Robert Fitz-Geoffrey Cogan, who had intruded on the portions of the Carews and De Courceys in 1438; so that the eighth earl of Desmond found himself in possession of almost the entire kingdom of Cork; but assuming to himself the right of levying separate exactions on the king's subjects, after the Irish manner, was attainted of treason and beheaded at Drogheda, 15th February, 1467 Nevertheless his estates passed, and in the person of his descendant Gerald, the fifteenth and last earl, had grown to an amount unexampled in the history of private property in Ireland. They extended upwards of 150 miles throughout the counties of Waterford, Cork, Kerry, and Limerick, and comprehended an area of 574,628 acres, according to the rough estimate of these times, the calculation seeming to have reference only to profitable land. Before the Desmond possessions had grown to this extent, the entire county of Cork had become Irish in language and habit.

Most of the old nobility of English descent had taken part with the defeated Yorkists in the latter end of the preceding century, and the Irish, on these noblemen leaving their estates to assist Simnel and Warbeck, had returned from their fortresses and over-run the new plantations. The families of Carew, Barnwell, De Courcey, Balram, Mandeville, and Arundel, were thus expelled from the country, while their places were occupied by the descendants of the Irish clans above mentioned. The reformation had made little progress in a country so indisposed for the reception of anything English, and on the breaking out of the northern rebellion in Elizabeth's time, Cork was considered the fittest place for an attempt in favour of the Catholic cause under the auspices of King Philip of Spain, to whom the country had been offered by Pope Gregory XIII. The principal Irish agent in bringing about the invasion was James Fitz-Maurice, the brother of the 15th Earl. On his landing with some Italian troops, accompanied by Saunders, the pope's legate, 1st July, 1578, he was joined by his brother Sir John of Desmond, and by James Fitz-Gerald, the earl's brother. The earl himself made some show of attacking them at first, and during the early part of the war which ensued took no active part against the queen; but having refused to yield up his castles and come in on the summons of the Lord Justice Sir William Pelham, he was, with all his family, proclaimed traitor, 1st November 1579. On this he set up his standard at Ballyhowra in Cork, declared for the Catholic cause, and seized on Youghall. The war which ensued was predatory and sanguinary on both sides, and lasted till November 1583, when the unfortunate earl, after losing all his castles, and being driven to lurk for months together in the woods, was put to death by one Kelly, who found him in a wretched cabin, where he was hiding, in the county of Kerry. The forfeited estates were divided into seigniories, and granted to English adventurers. Upwards of 20,000 acres fell to Sir Walter Raleigh, who had been active in the suppression of the rebellion. The other grantees in Cork were:—Sir Warham St. Leger, 6000 acres; Hugh Cuffe, Esq., 6000; Sir Thomas Norris, 6000; Arthur Robins, Esq., 18,000; Sir Arthur Hyde, 5574; Fane Beecher, Esq., 12,000; Hugh Worth, Esq., 12,000; Thomas Say, Esq., 5775; Arthur Hyde, Esq., 11,766; Edmond Spenser, Esq., 3028; Sir Richard Beacon (in Cork and Waterford), 6000.

On the 7th December, 1602, Sir Walter Raleigh conveyed his proportion in Cork and Waterford for a small sum to Sir Richard Boyle, afterwards earl of Cork. A large part of Beecher's seigniory was purchased by Sir Richard about the same time. On the latter he built the fortified town of Bandon, which he peopled with English settlers; and so stocked and planted his whole estate with British, that in 1611 his tenants on Raleigh's portion mustered 550 foot and 80 horsemen, and in 1622 on Beecher's portion, 564 foot and 66 horse, the horse being mostly gentlemen and freeholders. Before this settlement the county had been much distracted by the wars consequent on the landing of the Spaniards, 23rd September, 1601, in support of Hugh earl of Tyrone, then in rebellion in Ulster. Tyrone had shortly before this raised James Fitz Thomas, the nephew of the late earl, to the title. He was known as the *Sugaun* or Straw Earl; and in his rebellion was joined by great numbers of the native Irish under Florence Mac Carthy, who had also been created Mac Carthy More by Tyrone, in place of Daniel, lately deposed from the chieftainship by the same authority. This war was quieted just before the arrival of the Spaniards by the capture of the two leaders. Mac Carthy was executed, and the Sugaun Earl, being imprisoned in the tower of London, died there in 1608.

By the latter end of December, 1601, the rebellion was at an end; numbers of the chief rebels had fled to Spain, and after the exhibition of some discontents on the proclamation of King James, April, 1603, the country settled into tranquillity. Sir Richard Boyle now began to regulate the various boroughs which he had enlarged or founded on his estates, procuring charters for Youghall, Bandon, Cloghnakilty, and Baltimore. His family preserving the same policy afterwards, raised Middleton, Doneraile, Castlemartyr, and Charleville, to the rank of corporate towns; so that the whole representation of the county ultimately rested in the various branches of the Boyle family. The services of the British tenantry planted by this enterprising nobleman were soon called for, on the breaking out of the rebellion of 1641. The good conduct of the various bodies of this militia, under the command of lords Broghill, Kinalmeaky, Dungarvan, and Shannon, lord Cork's sons, materially conduced to the pacification of Munster. Throughout the war the English were generally successful in retaining the walled towns and castles. Lord Castlehaven had some successes on the other side in 1645, taking Mitchelstown, Liscarrol, Mallow, Doneraile, and various castles north of the Blackwater in this county; but these places did not long remain in his hands. The chief battles fought in Cork during this war were at Liscarrol, 3rd September, 1642, where Lord Inchiquin, accompanied by the sons of the earl of Cork, with a force of 2000 foot and 400 horse, totally defeated the Irish under general Barry, who is said to have had 7000 foot and 500 horse; and at Knockinoss, near Mallow, 13th November, 1647, where the same general, with 4000 foot and 1200 horse, routed the Irish, being 8500 strong, under the command of lord Taaffe and Sir Alexander (son of the famous Colkitto) Macdonnel. Four thousand Irish fell on the field of battle; and for his good conduct on the occasion lord Inchiquin was voted a present of 1000*l.* by the parliament. About 1657 lord Broghill began to agitate the question of the restoration, which event he was mainly instrumental in bringing about in 1660. He was now created lord Orrery, and advanced to the presidency of Munster, the affairs of which he managed with great prudence till 1668, when, falling into disfavour at court, he was deprived of his commission. In the same year he successfully defended himself on an impeachment before the Commons; and being restored to the favour of the king, returned to his native country, where he died in 1679. The forfeitures consequent on this rebellion affected chiefly the estates of lords Roche and Muskerry.

During the war of the Revolution, Cork was again the theatre of a desultory but sanguinary series of conflicts between the native Irish of the rural districts and the militia of British descent.

The chief sufferers by the forfeitures consequent on the war of the Revolution were Donogh lord Clancarty, Sir Richard Nagle, colonel Barrett, and the viscount Kenmare. The extent of land forfeited was 244,320 acres, valued at 32,133*l.* 12*s.* 6*d.* per annum; or 417,737*l.* 2*s.* 6*d.* at the then rate of purchase. This was by much the most extensive forfeiture in any one county. Among the numerous minor proprietors who suffered confiscation, the name of Hugolin Spencer, a descendant of the poet, occurs.

The antiquities are chiefly military, and comprise some of the finest buildings of the kind in Ireland. The castle of Kanturk, built by Mac Donogh, prince of Duhallow, is a square of 120 feet by 80, and about 70 feet in height. Lohort castle, built in king John's reign, is a massive keep, 80 feet high. Liscarrol castle, of the same date, is an oblong of 120 by 240 feet. Blarney castle, built by Cormack Mac Carthy in 1449, is still a fine ruin, though only one-fourth of the original building is now standing: the walls are 18 feet thick. The other castles still standing in the county are very numerous, and of great historical interest.

The dioceses of Cork, Cloyne, and Ross, with which the county is nearly co-extensive, rank respectively 19th, 25th, and 21st, among the 32 Irish dioceses in point of education. The average of educated persons in the three dioceses is 6.8 per cent.

The amount of direct taxation levied by grand jury presentment on this county in 1810 was 66,849*l.* 0*s.* 7*d.*, and in 1829, 72,969*l.* 2*s.* 7*d.*; being on an average of the twenty years included, 65,570*l.* 7*s.* 11½*d.* On a valuation made by order of the grand jury in 1829-30, the rent value has been estimated at 1,135,923*l.* 16*s.* 2*d.* per annum. (Smith's *History of the County of Cork*, Dublin, 1750, and Cork, 1825; Townsend's *Statistical Survey of Cork*, Cork, 1815; Cox's *History of Ireland*; *Parliamentary Reports and Papers.*)

CORK, a bishop's see in the archdiocese of Cashel, in Ireland. The chapter consists of a dean, chanter, chancellor, treasurer, archdeacon, and twelve prebendaries. This diocese stretches across the central district of the county of Cork, and embraces the county of the city. It extends in length, from east to west, 74 miles, and from north to south 16. It contains 83 parishes, constituting 65 benefices. In 1792 the numbers were, 94 parishes, 49 benefices, and 41 churches. In 1834 the numbers were, churches of the establishment, 58; other places of worship in connexion therewith, 26; Roman Catholic ditto, 73; Presbyterian ditto, 3; other Protestant dissenting ditto, 16. In the latter year the gross population of the diocese was 340,594; of whom there were 35,229 members of the Established Church, 303,984 Roman Catholics, 510 Presbyterians, and 871 other Protestant Dissenters; being in the proportion of 1 Protestant of whatever denomination to 8¼ Roman Catholics nearly. There were at the same time in this diocese 346 schools, educating 24,448 young persons, being in the proportion of 7$\frac{26}{100}$ of the entire population under daily instruction; in which respect Cork stands 19th among the 32 dioceses of Ireland, and is on a par with Dublin. Of the above schools 20 were, in 1834, in connexion with the Board of National Education.

The foundation of this see is ascribed to St. Barr, about the beginning of the seventh century. It became united to Cloyne, about 1464, and so continued till 1586, when, together with Cloyne, it was annexed to the diocese of Ross, and so continued till 1678, when these dioceses were again divided, Cork and Ross going together, and Cloyne separately. By the 3rd and 4th Wm. IV., c. 37, these sees are to be again united, on the united see of Cork and Ross becoming vacant. (Beaufort's *Memoirs of an Ecclesiastical Map of Ireland.*)

CORK, a city, the assize town of the county of Cork, in the province of Munster, in Ireland, situated in the county of the city of Cork, on both sides of the river Lee, four miles from its entrance into Cork harbour. 51° 54′ N. lat., 8° 30′ W. long. Distant from Dublin 124 Irish, or 158 English miles.

The county of the city consists of the city, suburbs, and liberties, and contains 45,000 statute acres, being a borough subject to the city magistrates, and liable to city taxation. There are numerous charters, of which the earliest bears date 26th Henry III., and the latest 31st Geo. II. By charter 10th March, 6th James I., the city and all the lands extending from its walls, for the circuit of three miles on every side, were erected into a separate county, the bounds of which were laid down by commissioners. The suburbs on each side of the island were defined by act 53 Geo. III., c. 3; but since that period, 1813, they have extended considerably.

The school of St. Barr is supposed to have first drawn inhabitants to this neighbourhood. The city was walled in by the Danes in the ninth century, and was afterwards repaired by King John. The situation was on an island of an oval form, round which the river ran in two channels; beyond these were narrow marshes skirting steep banks, which surrounded the basin occupied by the old town on every side. These marshy flats have subsequently been drained and built upon, and the city now spreads over the high ground on both sides of the river. Prior to the reign of Edward IV., it would appear that the suburbs of the old city also had spread over these grounds, as a charter of the second year of that reign recites, 'that inasmuch as the suburbs extending a mile on every part of the city had been destroyed by Irish enemies, the rent of 80 marks a year payable by the townsmen to the crown should be remitted, and the cocket or customs of the city should be granted for the purpose of constructing walls, until the inhabitants should be able to go peaceably one mile outside the same.' During the period alluded to in the account of Cork county, when the Irish had overrun the possessions of the decayed Yorkist nobility, and down even to the time of Elizabeth, the inhabitants of the city lived as if in a state of continual siege, never venturing beyond their walls except in numerous bodies, nor daring to marry out their daughters into the country, 'but contracting one with another among themselves, whereby all the citizens were related in some degree or another.' (Camden.)

About 1620 Cork was counted the fourth city of Ireland, being inferior both to Waterford and Limerick. From its low situation Cork can never be a place of defensive strength. The only severe siege it ever endured was in 1690, when held by Governor Mac Eligott, with six Irish regiments, for James. The siege was conducted by the duke of Marlborough, with whom were the dukes of Wirtemberg and Grafton (natural son of Charles II.), with a force of about 10,000 foot and 1200 horse. The town held out for five days; and after the English had lost a considerable number, among whom was the duke of Grafton, the garrison surrendered as prisoners of war. The city has enlarged rapidly since the beginning of the last century, and continues to extend, although not so rapidly as during the time of the late war, which was very beneficial to Cork in a local point of view.

Cork is governed by a common council, consisting of the mayor, two sheriffs, recorder, and as many aldermen as with these shall not exceed the number of twenty-four. A corporate combination which originated about seventy years ago, under the name of the Friendly Club, operates to the unfair exclusion of Roman Catholics. Out of 2665 freemen, there were in 1833 only 73 Roman Catholics. The freemen are exempt from paying tythes. Of the whole number, 1593 were non-residents, of whom the majority had been created by special favour of the Common Council. The average income of the corporation is 6237*l.* per annum, which is rather more than the merely municipal expenditure; but by Grand Jury presentments, and otherwise, a sum of about 54,000*l.* per annum is disposed of at the discretion of the corporate authorities.

The port and harbour of Cork are under the regulation of a Board of Commissioners, acting under 1 Geo. IV., c. 52, the nominees of the corporation. Receipts and expenditure as follows:—

1830	Dr.	7872*l.*	9*s.*	3*d.*	Cr.	8388*l.*	0*s.*	0*d.*
1831		8172	8	2		8015	4	3
1832		6855	3	4		7236	11	2½

The paving, lighting, and cleansing of the city lie with Wide Street Commissioners, originally appointed by 5th Geo. III., c. 24, modified by subsequent and local acts. The annual expense for lighting was, in 1833, 3200*l.*; and for paving, repairing, widening, &c., of streets, 5600*l*, of which 2800*l.* is defrayed by the county at large. This board is likewise under corporate control. It receives its income by Grand Jury presentments.

The supply of water is regulated by a Pipe Water Company incorporated under several acts, of which the last was 26 Geo. III., c. 38. A fourth part of the shares belong to the corporation. The charge to the inhabitants is two guineas per annum per house. There are no public fountains. Receipts of the company for 1833, 1577*l.* 5*s.* 8*d.*

The Grand Jury which presents for the public expenditure is nominated by the sheriffs: a sum of about 29,000*l.* is annually presented, all of which, with the exception of the income of the Wide Street Board, is disposed of by the Grand Jury. There is no municipal police, nor night watch of any kind. The turnkeys employed in the goal and bridewell, twenty-five in number, are the only force for the preservation of the peace supported by the corporation. The corporation is one of those subject to the 'New Rules' of 25 Ch. II.

The number of the constabulary in the county of the city of Cork on the 1st January, 1836, was—chief constables, 2; constables, 11; sub-constables, 62; horses, 6: expense for 1835, 2632*l.* 6*s.*, whereof 1260*l.* 19*s.* 5*d.* chargeable against the corporation of the city.

The convict establishment at Cork consists of a penitentiary, or convict depôt, at Cork, and a hulk at Cove. In 1834, the number of committals to the depôt was 284, and the expense 1899*l.* 2*s.* 8½*d.*: and the number of committals to the hulk at Cove, 441, and the expense, 2886*l.* 10*s.* 2*d.*

Of the charitable institutions the principal is the Foundling Hospital, originally intended as a workhouse. The Act which founds the institution has a clause permitting the reception of exposed children, and of this advantage has been taken to turn the institution solely to that purpose. In 1833 the number of children at nurse was 1319, and those within the walls 446. All are educated as Protestants. The hospital derives its income from a tax of one shilling per ton on all coals that come into the harbour. This impost is collected to a distance of twelve miles from the city. In 1833 it averaged upwards of 6000*l.* per annum. Skiddy's Almshouse, Bertridge's charity, the Blue Coat Hospital, and Green Coat Hospital, are other charitable foundations under the control of the corporation. Relief is extended from these solely to Protestants. The house of industry is supported by voluntary contributions and city and county Grand Jury presentments. Income in 1833, 4936*l.* 1*s.* 10*d.* Paupers admitted same year, 1850. Attached is a lunatic asylum supported by county and city Grand Jury presentments. Account presented in 1833, 4890*l.* Number of patients, 343. An hospital with 140 beds is attached. There are also two infirmaries and a Fever Hospital; but the accommodation is still far from being sufficient. A sum of 30,000*l.* was, in 1833, bequeathed by a Mr. Lapp for the support of the aged Protestant poor of the city.

The city rental is estimated at 122,000*l.* on an allowance of 25 per cent. under real value. The number of the distressed population is very great. In 1832 it was estimated that of a city population of 86,534, 23,021 were depending on casual employment for subsistence; of these, 6250 were considered to be destitute. Poverty at present prevails to a frightful extent in the suburbs.

The main street which crosses from north to south, perpendicular to the length of the island, is the most antient part of the city. It was formerly divided into north and south by a bridge and castle. The Exchange, a heavy square building, stands on the site of the latter. The old castle and gates which terminated this street have been removed, as also the prisons subsequently built upon their sites. The island was formerly intersected by numerous canals, which have been arched over from time to time, and now form the principal modern streets. The Grand Parade was thus formed in 1780; Patrick Street, in like manner, in 1783; and Nile Street in 1795. The South Mall, the best street in Cork, and Nelson's Place, had likewise a similar origin. The insular appearance of the central part of the city is thus in great measure removed. Cork now covers a large extent of high ground on both banks of the Lee, as well as the low ground which was formerly occupied by marshes between. The greater part of these marshes were drained about 1720—30. The parish of St. Paul was formed of these marshes, and the church of St. Paul built on the reclaimed land in 1723. About the same time the cathedral, which had suffered in the late siege, was rebuilt, as also Christchurch, for a like reason. St. Anne's Shandon was rebuilt in 1722, and St. Peter's in 1782. The appearance of the city is materially affected by an unsightly variety of colours, arising from the different sorts of building materials employed. One side of the steeple of St. Ann's, or Upper Shandon Church, has been built of red sandstone, and the other three of dark limestone. New quays are being constructed, which add much to the convenience and beauty of the city. Mr. Inglis calls Cork 'a very fine city, surpassed by few in the excellence or width of its streets, and deficient only in the architectural beauty of its public buildings.'

Three large Roman Catholic chapels of cut stone are building; and the court-house, now in hand, is to cost 16,000*l.*

Since the termination of the late war, the trade of Cork has, in some measure, changed its character. Owing to the cessation of government contracts there is no longer the same field for great mercantile houses; the number of minor dealers has increased proportionately. The carriage trade from England is at present very brisk from the smaller traders supplying themselves direct from London or Bristol. The chief import trade is that of timber, of which the annual average is 15,000 tons. The chief export trade is in bacon, butter, corn, live stock, and provisions. Cork butter holds a very high character in the market, chiefly owing, it is said, to the superior cooperage of the casks. The export of bacon and live-stock is on the increase. The manufacture of glass, metal castings, and iron-work, is carried on briskly. Leather is manufactured to the value of 100,000*l.* per annum. A woollen manufacture gives employment to about 200 persons. There are numerous and very extensive distilleries and breweries, and a large manufacture of flour and meal.

Merchant vessels unload at Passage, about six miles from the city, from which goods are transported in lighters of about thirty tons to the quays. The amount of Customs collected in the district of Cork for the year 1835 was 216,446*l.* 1*s.* 7*d.*; and of Excise duty for the same district, 252,452*l.* 14*s.* 5½*d.*

The number of stamps issued to newspapers in Cork in 1835, was—

Cork Constitution . .	150,675
Cork Evening Herald .	58,350
Cork Southern Reporter .	189,700
People's Press . . .	12,628
Mercantile Chronicle .	30,001

TABLE OF POPULATION.

Date.	How calculated.	Houses.	Families.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	Families not included in preceding classes.	Males.	Females.	Total.
1792	Estimated by Dr. Beaufort.	8,100	No return.	No return.	No return.	No return.	No return.	No return.	73,000
1813	Under Act of 1812.	7,652*	,,	,,	,,	,,	,,	,,	64,394*
1821	Under Act.	11,180	21,528	,,	,,	,,	46,787	53,871	100,658
1831	Under Act.	11,986	19,951	1,967	10,989	6,995	48,312	58,704	107,016

In 1834 there were in the nineteen parishes comprehended, wholly or in part, within the county of the city of Cork, 139 schools, educating 5935 males and 4489 females; total children under instruction, 10,424. Of these schools, 26 give gratuitous instruction; several of these are under the management of religious sects. The Cork library, which was founded in 1807, owes its origin to the exertions of the Rev. Doctor Hincks, and formerly enjoyed an annual parliamentary grant. There is also a Mechanics' Institute, with a school for 120 children.

(Smith's *History of the County of Cork;* Inglis's *Ireland;* Croker's *Sketches in the South of Ireland*, London, 1823; *Parliamentary Reports and Papers.*)

CORMORANT. [PELECANIDÆ.]

CORN-TRADE. From a very early period of our history the corn-trade of the country has been the subject of legislative interference and restriction. At first, and while the kingdom was thinly peopled, it was deemed good policy, in order to insure a sufficient supply of food for its inhabitants, to forbid the exportation of corn, while its importation was freely permitted; but, in later times, during which the population has increased with a rapidity rarely seen in long-settled countries, the policy of the legislature has been altogether different. The object has been to stimulate home production by prohibiting importation, or by restricting it in such a degree as to secure to the native farmers a monopoly of the home market. It needs no argument now to show that the policy of our ancestors was ill calculated to insure the end which they had in view, that of providing a sufficiency of cheap food for the common people; how far the opposite policy has been found to answer the avowed object of its advocates it is not our present intention to inquire. That object professes to have for its ultimate aim the securing of a constant sufficiency of a principal article of food, independent of all foreign countries, by means which shall insure to the home grower an adequate return for the capital and skill employed.

The earliest statute extant upon this subject is the 34th Edw. III., c. 20, passed in 1360-61, by which it is enacted, that 'the passage of corn shall be prohibited in all the ports of England, so that none have licence nor warrant to pass with such corn in anywise, unless it be to Calais or Gascoigne, or to other special places which it behoveth that the king cause to be furnished with the corn of England, and that at his own ordinance and licence.'

The phraseology of this act has led to the supposition that exportation was previously illegal, except with a licence from the king, and that the object in framing this law was to define and restrict the royal prerogative in this particular. In 1394 another act was passed (17 Richard II., c. 7) of a somewhat contrary tendency. By this new law licence is granted by the king—such are the terms of the act—'to all his liege people of his realm of England, to ship and carry corn out of the said realm, to what parts that please them, except to his enemies, paying the subsidies and devoirs thereof due, notwithstanding any ordinance, proclamation, or any defence (prohibition) made before this time to the contrary; nevertheless he will that his council may restrain the said passage when they shall think best for the profit of the realm.' This act was confirmed in 1425 by the act 4 Henry VI., c. 5. Eleven years later it was thought necessary to fix a limit in regard to price at which the liberty to export should cease, and that limit was declared (15 Henry VI., c. 2) to be 6*s.* 8*d.* per quarter for wheat and 3*s.* per quarter for barley. This act was passed for only a limited time, and had expired, when, in 1441, on the meeting of parliament, it was renewed in the following terms: 'Our sovereign lord the king, forasmuch as this statute is not now in his force, and that many counties adjoining to the sea may not sell the substance of their corn but by carriage and bringing by the sea, hath ordained, that the statute and ordinance aforesaid, now expired, shall begin to hold his force at the Feast of the Nativity of our Lady next ensuing, and shall endure from thence till the parliament next to be holden after the same feast, so that a parliament be holden within ten years next ensuing after the first beginning of this present parliament, and if so that there be no parliament holden within the same ten years, that then it shall continue and endure till the end of the same ten years:' in 1444 this act was 'ordained to be perpetual, and stand in his force for ever' (23 Henry VI., c. 5).

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* Return incomplete.

The limited permission thus given to export their produce must be attributed to the increasing power of the land owners; and it may be taken as evidence that the cost of production in this kingdom was at least equally moderate with the cost in neighbouring countries, that in all this time no attempt was made to prohibit or restrict the importation of the produce of other countries. Such a restriction was however imposed in 1463 by the statute 3 Edward IV., c. 2, which on the plea that 'the labourers and occupiers of husbandry within this realm of England be daily grievously endamaged by bringing of corn out of other lands and parts into this realm of England, when corn of the growing of this realm is at a low price,' enacts that 'no person, from the feast of Saint John the Baptist next ensuing, shall bring into England any wheat, rye, or barley, not of English or Irish growth, unless the price of wheat shall exceed 6*s.* 8*d.* the quarter, that of rye 4*s.*, and that of barley 3*s.*, on pain of forfeiture of the grain.' The statutes here mentioned, by which the prices were established at which the importation and exportation of corn were respectively to cease, continued in force until 1534, when a new act (25 Henry VIII., c. 2) prohibits, except by licence from the crown, the exportation of grain, the reason for which alteration is thus quaintly expressed in the preamble to the act: 'Forasmuch as dearth, scarcity, good, cheap, and plenty of cheese, butter, capons, hens, and other victuals necessary for men's sustenance, riseth and chanceth of so many and divers occasions that it is very hard and difficile to put any certain prices to any such things, no person or persons, unless it be by licence under the king's great seal, from henceforth shall carry or convey any corn, beeves, muttons, veals, porks, or any other of the above said victuals to any parts beyond the sea, except only for the victualling the towns of Calais, Guinnes, and the marches of the same, and except for victualling of ships passing the seas.' The civil wars which preceded the accession of Henry VII. had caused much land to be thrown out of cultivation, and the act of 1534 was probably occasioned by the consequent diminution of produce, but this attempt failed, as it necessarily must, to increase the supply of grain, which effect would best have been brought about by a removal of all restriction. Such a course would have ill agreed with the imperfect ideas upon such subjects which then prevailed; but as the evil was increased during the next 17 years, and it was thought necessary to apply some remedy, the statute 5 and 6 Edward VI., c. 5, was then passed. This statute is entitled, 'An act for the maintenance and increase of tillage and corn,' and it enacts that thenceforth at least as much land should be tilled in every parish as had been under the plough at any time since the accession of Henry VIII., under a penalty, to be exacted from the parish, of 5*s.* for every acre that should be deficient. The general permission to export grain, which had been taken away in 1534, was restored in 1554 (1 and 2 Philip and Mary, c. 5) whenever the prices were at or under 6*s.* 8*d.* per quarter for wheat, 4*s.* for rye, and 3*s.* for barley. The preamble to this act makes it appear that it was passed, not in consequence of the prevalence of any sounder views of public economy, but because it was found impossible to prevent exportation, and it was thought that better success would attend the regulation than the prohibition of the trade. In 1562 an alteration in the law was made, by enlarging the limits of the prices which governed exportation, and these were fixed at 10*s.* per quarter for wheat, 8*s.* for rye, and 6*s.* 8*d.* for barley; and nine years later it was enacted (13 Eliz., c. 13) that corn might be exported on payment of certain specified duties at all times when no proclamation had been issued to the contrary. The law of 1463 had all this time been in existence, prohibiting importation while the prices of wheat, rye, and barley should be under 6*s.* 8*d.*, 4*s.*, and 3*s.* respectively; but the prices that had for some time prevailed rendered this law inoperative, and the law of 13 Elizabeth therefore gave virtual freedom to the trade in corn.

In the succeeding reigns and up to that of William and Mary this system was continued, but accompanied by various modifications as regards the limiting prices and the rates of duty chargeable. The prices at which export was permitted were from time to time enlarged, until, in 1670, wheat might be shipped away at any time when the price did not exceed 53*s.* 4*d.* per quarter. At the same time import duties were imposed, so heavy as to amount to a prohibition, the object of these regulations being to keep the price of wheat always as high as 53*s.* 4*d.* per quarter for the advantage of the land-owners. Not satisfied, however, with this degree of favour, this powerful class succeeded in 1689 in procuring an act (1 William and Mary, c. 12) whereby they secured the payment of a bounty amounting to 5*s.* per quarter on the exportation of wheat when the price did not exceed 48*s.* per quarter; and bounties according to the same scale were granted for the export of barley and other grain.

Not content with interposing obstacles to a free trade in corn with other countries, our ancestors thought fit to place restrictions upon that trade within the kingdom. It was imagined that if the consumers could be brought to deal immediately with the growers, the profit of intermediate dealers would be saved. Under this impression, both parties looked unfavourably upon those dealers, the sellers imagining that they could obtain better prices and the buyers that they could purchase cheaper but for the middlemen, while the common people were easily led to believe that the dearths which then frequently occurred were attributable to the practices of the dealers in buying up corn and withdrawing it from the market. An act was passed, declaring it to be an offence to buy corn in one market with intent to sell it again in another, and persons guilty of this offence, to which the name of *engrossing* was given, were punished with imprisonment and the pillory. By a statute of Elizabeth, no person was permitted to convey corn from one part of the kingdom to another, unless he had a licence for the purpose, the right of granting or withholding which was confided to the magistrates in quarter sessions. These restrictions were modified in 1624, and by the act 15 Charles II., c. 7, the engrossing of corn was made legal, whenever the price of wheat did not exceed 48*s.* per quarter. So recently as the year 1800, when the price of wheat exceeded 100*s.* per quarter, engrossing however has been held to be an offence at common law, and a corn-dealer was convicted of it, but was not brought up for judgment.

The act of 1689 was modified in 1773, by reducing to 44*s.* per quarter the price at which the payment of bounty was to cease, and in 1815 the granting of bounty was discontinued by law. In fact no bounty could have been claimed at any time after 1792, in which particular year the average price for the whole year was below the price fixed in 1773. At that time (1773) importation was permitted upon payment of the nominal duty of 6*d.* per quarter whenever the price should be above 48*s.* This permission was considered injurious to their interests by the landowners, who, on the plea that the country might become dependent upon foreign countries for its supply of food, succeeded in 1791 in obtaining an act whereby the price at which importation was allowed at 6*d.* per quarter was raised to 54*s.*, a duty of 2*s.* 6*d.* was imposed when the price was between 50*s.* and 54*s.*, and 24*s.* 3*d.* per quarter was charged when the price was below 50*s.* A new law, passed in 1804, shifted the price at which the prohibitory duty of 24*s.* 3*d.* was charged to 63*s.*; between that price and 66*s.* the duty was 2*s.* 6*d.*; and above 66*s.*, only 6*d.* per quarter. Under the act of 1791 the maritime counties of England were divided into twelve districts, and importation and exportation were regulated in each district by their respective prices, but in 1804 this plan was altered, and the aggregate average of the twelve districts was taken as the measure for regulating importation and exportation to and from the kingdom.

A bill for raising the duties on importation, which was brought into the House of Commons in 1814, met with so much opposition that it was abandoned; but in the following year an act was passed, after great opposition, and exciting great clamour on the part of the people, allowing the free importation of corn from foreign countries, in order to be warehoused or re-exported, but forbidding the importation for consumption, unless the average prices were, for wheat 80*s.*; for rye, pease and beans, 53*s.*; for barley 40*s.* and for oats 26*s.* Every description of corn might be brought for consumption from the British colonies, when the prices were, for wheat 67*s.*, rye, peas, and beans 44*s.*, barley 33*s.*, and oats 22*s.* The deficient harvests of 1816 and 1817 raised the prices above these limits, and so much grain was imported free of duty that a considerable surplus was left for future and more abundant years. One of these years of abundance occurred in 1822, and during the next twelve months the prices of grain fell below what they had been in any year since 1792. It was expected, on the part of the land-owners, that the effect of the act of 1815 would have been to keep the price of wheat steady at or about 80*s.* per quarter, but this expectation was so far from being realised, that, if we except the year of scarcity already mentioned, the average price of the period which elapsed before the system of prohibition was exchanged for that of a graduated duty in 1829, was only 58*s.* 5*d.* per quarter. In the mean time, by an act passed in 1823, the law of 1815 was modified so as to allow of importation whenever the prices were, for wheat 70*s.*, for rye, peas, and beans 46*s.*, for barley 35*s.*, and for oats 25*s.* per quarter, but a duty of 17*s.* a quarter for wheat (and other rates in proportion for other grain) was to be payable during the first three months of importation, and 12*s.*, &c. thereafter: the prices of corn were never such during its continuance as to bring this act into operation. In 1825 the importation of wheat from the English colonies in North America was legalised upon payment of a duty of 5*s.* per quarter, without reference to the price in the English market. In 1826, a long continued drought caused great apprehensions concerning the coming harvests, and in order to prevent the opening of the ports to fresh importations, and the consequent probable admission of a quantity of corn beyond the actual wants of the country, by which prices would have been affected perhaps for years after, permission was given to the government to admit by proclamation 500,000 quarters of foreign wheat then warehoused in the kingdom.

The inconvenience of the system of alternate prohibition and unlimited importation was at length fully recognised by all parties, and in 1829 the act was passed (9 Geo. IV. c. 60) by which the trade in corn has since been regulated. The principle of this act is the constant freedom of importation upon the payment of duties fluctuating according to the average price of grain, decreasing as the price advances, and increasing as the price falls. The following table exhibits the scale of duties graduated according to the average prices of the different kinds of grain.

WHEAT.

When the price shall be—		per qr.	
62*s.* and under	63*s.* per qr. .	24*s.*	8*d.*
63 ..	64 ..	23	8
64 ..	65 ..	22	8
65 ..	66 ..	21	8
66 ..	67 ..	20	8
67 ..	68 ..	18	8
68 ..	69 ..	16	8
69 ..	70 ..	13	8
70 ..	71 ..	10	8
71 ..	72 ..	6	8
72 ..	73 ..	2	0
above 73*s.*		1	0
under 62*s.* and not under 61*s.*		25	8

and in respect of each integral shilling, or any part of such integral shilling, by which such price shall be under 61*s.*, such duty shall be increased by 1*s.*

OATS.

When the price shall be 25*s.* and under 26*s.* per qr., 9*s.* 3*d.* duty; and in respect of every integral shilling by which such price shall be above 25*s.*, such duty shall be decreased by 1*s.* 6*d.* until such price shall be 31*s.* Whenever the price shall be above 31*s.*, the duty shall be 1*s.* Whenever such price shall be under 25*s.* and not under 24*s.*, 10*s.* 9*d.*; and in respect of each integral shilling, or any part of each integral shilling, by which such price shall be under 24*s.*, the duty shall be increased by 1*s.* 6*d.*

BARLEY.

When the price shall be 33*s.* and under 34*s.* per quarter, 12*s.* 4*d.* per quarter duty; and in respect of every integral shilling by which such price shall be above 33*s.*, such duty shall be decreased by 1*s.* 6*d.*, until such price shall be 41*s.*, and whenever the price shall be at or above 41*s.*, the duty shall be 1*s.* per quarter. Whenever the price shall be under 33*s.* and not under 32*s.*, 13*s.* 10*d.*; and in respect of each integral shilling, or any part of each integral shilling, by which such price shall be under 32*s.*, the duty shall be increased by 1*s.* 6*d.* per quarter.

RYE, PEASE, AND BEANS.

When the price shall be 36*s.* and under 37*s.* per quarter, 15*s.* 6*d.* per quarter, and in respect of every integral shilling by which the price shall be above 36*s.*, the duty shall be decreased by 1*s.* 6*d.* until such price shall be 46*s.* When the price shall be at or above 46*s.*, 1*s.* When the price shall be under 36*s.* and not under 35*s.* per quarter, 16*s.* 9*d.*; and in respect of each integral shilling, or any part of each integral shilling, by which such price shall be under 35*s.*, the duty shall be increased by 1*s.* 6*d.* per quarter.

If the produce of and imported from any British possession in North America, or elsewhere out of Europe, the duties are as under;—

Wheat, until the average price shall be 67*s.* per quarter . . .	5*s.*	0*d.*
,, when the average price shall be above 67*s.*	0	6
Barley, until the average price shall be 34*s.* per quarter	2	6
,, when ,, at or above 34*s.*	0	6
Oats, until the average price shall be 25*s.* per quarter . . .	2	0
,, when ,, at or above 25*s.*	0	6
Rye, pease and beans—		
,, until the average price shall be 41*s.* per qr.	3	0
,, when ,, at or above 41*s.*	0	6

Meal or flour, the produce of each different kind of grain, is admitted at rates of duty equivalent to those chargeable on each kind of grain respectively. In calculating such duties the following quantities by weight of meal or flour are deemed to be equivalent to one quarter of grain, viz. Wheat-meal or flour, 392 lbs.; barley-meal, bean-meal, and meal of maize or Indian corn, 384 lbs.; rye-meal, 424 lbs.; and oatmeal, 176 lbs.

Having thus offered a brief sketch of the laws by which the trade in corn has been and is regulated in this country, it remains to be shown what has been the course and extent of that trade during the period for which authentic records exist.

Various attempts have been made at different times to estimate the consumption of this kind of food within the kingdom, but in the absence of any machinery for that purpose, such estimates must always partake of a great degree of uncertainty.

The following estimate of the produce of England about the close of the seventeenth century, was made by Mr. Geoffrey King, whose statistical calculations have usually been received with much confidence. At that time wheat formed a much smaller proportion of the food of the English people than it does at present.

Wheat . .	14,000,000 bushels.
Rye . . .	10,000,000
Barley . . .	27,000,000
Oats . . .	16,000,000
Pease . . .	7,000,000
Beans . . .	4,000,000
Vetches . .	1,000,000
	79,000,000 in all.

The quantities here assumed were not all consumed within the kingdom, a part being exported under the Bounty Act, as hereafter stated. Mr. Charles Smith, the author of the celebrated 'Tracts on the Corn Trade,' estimated that the six millions of inhabitants, then supposed to be living in England and Wales, consumed annually 3,750,000 quarters of wheat, 1,016,125 barley, 999,000 rye, 1,791,125 oats—and that there were besides used annually within the kingdom—

90,000	quarters	wheat—distilled, and made into starch.
3,300,000	,,	barley—made into beer;
117,000	,,	ditto—applied to other uses;
2,461,500	,,	oats—used for horses, &c.
31,000	,,	rye—used by tanners, and for fattening hogs;
90,000	,,	beans and pease—for negroes, horses, and hogs;
134,000	,	pease—for sailors, &c.;
90,000	,,	rape and other seed—for obtaining oil.

The aggregate of these quantities makes up nearly 50 per cent. more than the estimate of Mr. King, without making any allowance for the shipments to foreign countries, which, at that time, averaged about 1,500,000 bushels annually, and not taking into account the quantity required for seed, which must have amounted to about as much as the exports.

Dr. Colquhoun estimated the average annual consumption of the United Kingdom in 1812, as follows:—

Species of Grain.	Population using each kind of grain.	Average quantity.	Consumed by man.	Consumed by animals.	Used in beer and spirits.	Used in various manufactures.	Total number of quarters.
		Bushels.	Quarters.	Quarters.	Quarters.	Quarters.	
Wheat	9,000,000	8	9,000,000	..	..	170,000	9,170,000
Barley	1,500,000	10	1,875,000	210,000	4,250,000	..	6,335,000
Oats	4,500,000	12	6,750,000	10,200,000	..	..	16,950,000
Rye	500,000	10	625,000	59,000	..	1,000	685,000
Beans and Pease . .	500,000	8	500,000	1,360,000	..	..	1,860,000
	16,000,000		18,750,000	11,829,000	4,250,000	171,000	35,000,000

No allowance for seed is included in this estimate, which, besides, was made when the population was less than two thirds of its present amount. If we allow that four millions of the population in Ireland are fed without having recourse to corn, we still have more than twenty-two millions of grain-consuming people. Taking those circumstances into consideration, it will perhaps not be beyond the truth if we estimate the quantity of grain actually used in the United Kingdom at about fifty-five millions of quarters annually. The most careful estimate that has yet been made concerning the employment of the soil in the United Kingdom gives rather more than nineteen millions of statute acres for arable and garden land; and if we assume that the produce of all kinds of grain, taking one kind with another, amounts to three quarters to the acre, which is known to be very near to the actual produce, we arrive by that mode of computation at a result which agrees substantially with the estimate already offered.

The circumstance to which allusion has just been made, that half the population of Ireland do not employ grain for their subsistence, leaves a considerable quantity of the produce of that part of the kingdom for use in England. The greater part of Irish grain thus brought to other parts of the kingdom consists of oats; the quantity of wheat is also considerable. The shipments have increased very materially since the Union up to 1828, but since that time have been nearly stationary, as will be seen from the following statement, which includes all sorts of grain.

	Quarters.		Quarters.		Quarters.
1801 .	900	1813 .	977,164	1825 .	2,203,962
1802 .	467,067	1814 .	812,805	1826 .	1,692,189
1803 .	343,548	1815 .	821,192	1827 .	1,829,743
1804 .	316,958	1816 .	873,865	1828 .	2,826,135
1805 .	306,923	1817 .	699,809	1829 .	2,305,806
1806 .	466,947	1818 .	1,207,851	1830 .	2,212,729
1807 .	463,406	1819 .	967,861	1831 .	2,419,643
1808 .	656,770	1820 .	1,417,120	1832 .	2,605,734
1809 .	933,658	1821 .	1,822,816	1833 .	2,736,281
1810 .	632,849	1822 .	1,063,089	1834 .	2,742,586
1811 .	430,189	1823 .	1,528,153	1835 .	2,679,342
1812 .	600,268	1824 .	1,634,024		

The proportions of different kinds of grain in the last three years of the series were as follows:—

	1833.	1834.	1835.
Wheat . .	844,201	779,504	661,776
Barley . .	107,519	221,578	166,503
Rye . .	167	982	615
Oats . .	1,762,519	1,719,501	1,822,767
Indian corn .	117	75	——
Beans . .	19,113	18,770	24,234
Pease . .	2,645	2,176	3,447
	2,736,281	2,742,586	2,679,342

Until the breaking out of the war of the French Revolution, this country may be said to have been an exporting country for corn. In the ten years from 1760 to 1769 there were only two years in which the quantity of wheat exported did not exceed the quantity imported; the aggregate average price during those ten years being 45*s.* 10*d.* per quarter; or excluding the two years of importation (1767 and 8), 41*s.* 9*d.* per quarter. At these prices the export was not much stimulated by the bounty, the whole excess of the quantity sent abroad being only 1,384,561 quarters. In the next decennary period, five were years of export and five of import, the average prices of each division being 40*s.* 6*d.* and 49*s.* 5*d.* respectively. In the next period of the like duration, viz., 1780 to 1789, six were years of export and four of import, the average prices being 44*s.* 5*d.* for the years of exportation, and 47*s.* 10*d.* for the other years. Of the next decennary period, 1792, the last year of peace, was likewise the last year of exportation; if that year, when the average price was 41*s.* 9*d.*, be excluded, the average price of the period was 57*s.* 6*d.* per quarter, and the importation amounted to 3½ millions of quarters. The importations of wheat from foreign countries, including our North American colonies, in each year from 1800 to 1835 inclusive, and the average price according to the London Gazette, have been as follows:—

	Quarters.				Quarters.		
1800	1,242,507	110*s.*	5*d.*	1818	1,503,518	83	8
1801	1,396,359	115	11	1819	122,133	72	8
1802	498,359	67	9	1820	34,274	65	10
1803	297,145	57	1	1821	2	54	5
1804	398,067	60	5	1822	..	43	3
1805	842,879	87	1	1823	12,137	51	9
1806	280,776	76	9	1824	15,777	62	0
1807	379,833	73	1	1825	525,231	66	6
1808	..	78	11	1826	315,892	56	11
1809	424,709	94	5	1827	572,733	56	9
1810	1,491,341	103	3	1828	842,050	60	5
1811	238,366	92	5	1829	1,364,220	66	3
1812	244,385	122	8	1830	1,701,885	64	3
1813	425,559	106	6	1831	1,491,631	66	4
1814	681,333	72	1	1832	325,435	58	8
1815	..	63	8	1833	82,346	52	11
1816	225,263	76	2	1834	64,653	46	2
1817	1,020,949	94	0	1835	28,483	39	4

It was one principal object of the framers of the law of 1829 to prevent fluctuations in the prices of English grain. How far that object has been attained will be seen by the following statement of the highest and lowest prices that have occurred in each of the years since elapsed, and the per-centage difference between the same, calculated upon the lowest price of the year.

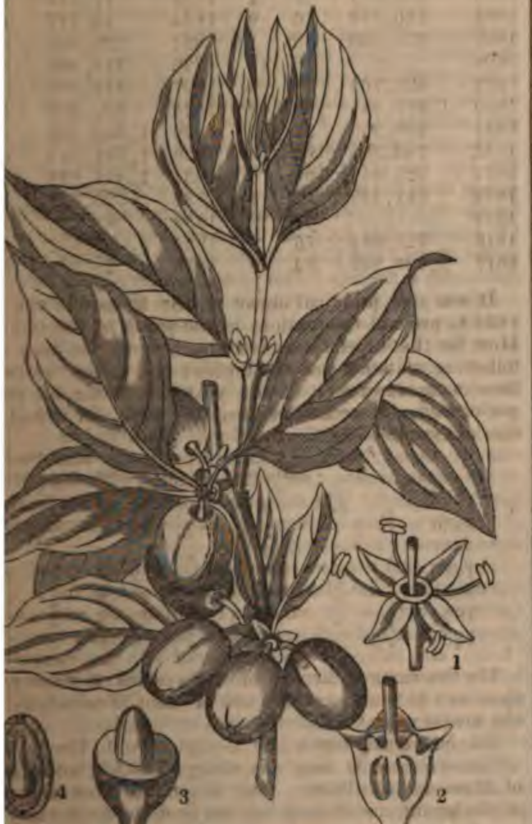
	Highest.			Lowest.			Per-centage fluctuation.
	s.	*d.*		*s.*	*d.*		
1829 . .	75	3	.	56	3	.	33¾
1830 . .	72	11	.	56	1	.	30
1831 . .	73	5	.	60	5	.	21½
1832 . .	63	5	.	52	5	.	20¾
1833 . .	55	5	.	49	10	.	11¼
1834 . .	49	6	.	41	5	.	19½
1835 . .	42	10	.	36	8	.	17

The fluctuation during the whole period of seven years is thus seen to have exceeded 100 per cent. if calculated upon the lowest price.

The principal supplies of foreign corn to Great Britain are drawn from Danzig, Hamburg, Rostock, and the ports of Russia on the Baltic. The shipments from Danzig are of the produce of Poland, and are brought down the Vistula on rafts to the port of shipment. The permission to import from British colonies at a low rate of duty has not occasioned the shipment of any considerable quantity. There is reason for believing that the produce of our North American colonies is not usually more than enough, if indeed it be enough, for their own consumption, and that in every case where corn has been shipped thence for England, at least an equal quantity has been procured from the United States to supply its place. During the last one or two years this trade has been interrupted by the high prices in the United States, and the shipments to Europe from British America have consequently nearly ceased.

CORNA'CEÆ, a small natural order of polypetalous exogens, recently cut off from Caprifoliaceæ, to which they were formerly referred. They consist principally of shrubs, very rarely of herbaceous plants, having opposite strongly-veined leaves without stipules, an inferior ovary, in each of whose cells is one pendulous ovule, four valvate petals, tamens alternating with them, and a drupaceous fruit wo cells; the embryo lies in some fleshy albumen.

ny of the species are cultivated in European gardens, ally Cornus mas, or cornel-tree, Cornus alba, san-, and sericea, called dogwood, together with Bentha-agifera. They are valued either for their bright red , which in the winter are highly ornamental, or for richly-coloured fruit. Benthamia fragifera, in parti- has its drupes collected in roundish strawberry-like which have a beautiful effect in the south-west of nd, whither it has been some years introduced from imalaya Mountains. The bracts of some species of rder are very large, and resemble petals, and being they are a gay substitute for the flowers themselves, are small and inconspicuous. This is particularly se with Cornus herbacea and florida, and Benthamia ra. Medicinally, Cornaceous plants are of great im-ce. The American physicians esteem the bark of s florida and sericea equal to Cinchona as a febrifuge. merly the Cornus mas used to be cultivated in gardens sake of its fruit, which were called cornelian cherries. deciduous tree, with clusters of small starry yellow s appearing in the spring before the leaves. The are ovate-lanceolate, acute, wavy, and of a dull greyish The fruit consists of oblong drupes of a red or oc-ally a yellow colour; they are excessively austere be-pe, but eventually *blet* like medlars, and then become e.



[Cornus mas.]

expanded flower, with the petals and stamens; 2, an ovary cut through lly, showing a cup-like disk surrounding the base of the style, and the ovules; 3, a fruit cut so as to show the stone; 4, a vertical section hose, exhibiting the embryo and albumen.

RNA'RO, LUIGI, or **LEWIS,** a Venetian nobleman, rated for the successful care he took of his health, by s of diet. He was originally of a weak constitution, by the time he had attained mature manhood his in-erate indulgence in eating, drinking, and other plea- had brought on so many disorders that life was a n to him. He informs us, that from his thirty-fifth to his fortieth, he spent his nights and days in almost nitted suffering. Having tried all their other reme- in vain, his physicians earnestly recommended a more erate course of life, and when he was forty he began ually to diminish the quantity of his food, and to eat and drink nothing but what nature required. At first he found this severe regimen very disagreeable, and he confesses that he did occasionally relapse to 'the flesh-pots of Egypt.' But as each of these relapses brought back his old symptoms, he soon exerted all his resolution, and by a spare and simple diet became a hale man within a year. From temperance he proceeded to abstemiousness, until at last the yolk of an egg was often considered sufficient for a meal. His health and spirits kept improving all the while, and as for enjoyment in eating, he says he brought himself to relish dry bread much more than he had ever done the most exquisite dainties of the table. At the same time he carefully avoided heat and cold, over-fatigue, late hours, sexual excesses, and all violent passions of the mind, having fully ascertained that nothing is more destructive of health and longevity than an indulgence in ambition, envy, hatred, and the like. Melancholy was to be equally avoided, but from this depressing passion his light food and peaceful slumbers kept him wholly free. He recommended, by practice, exercise, riding on horseback, the sports of the field, and those gentle excitements derivable from fine scenery in the country, the contemplation of architectural and other works of art in towns and cities, and the hearing and playing of music.

He records of himself, that when he was a very old man he used often to sing with his grandchildren, and that too with a voice louder and clearer than when he was a young man.

When he was seventy years old he suffered a dreadful accident, by which his head and body were battered, and a leg and arm dislocated. Considering his advanced age, the physicians thought these injuries must speedily prove fatal, but after his limbs had been set, he recovered under the slightest medical treatment, and without experiencing any fever. Hence he inferred that a life of strict temperance is a safeguard against the ill effects that generally follow such accidents. When he was about seventy-eight, the quantity of nourishment he took in the twenty-four hours was, of bread, light meat, yolk of egg, and soup, twelve ounces in all; of wine, fourteen ounces; and these were portioned out into four separate meals. By the advice of his medical friends he then added two ounces to his solid food, and two ounces to his wine; but this trifling increase was soon given over, as it destroyed his ease and vivacity, and made him peevish and melancholy. In his eighty-third year he wrote his treatise 'Of the Advantages of a Temperate Life.' He subsequently added three other discourses on the same subject, the fourth and last being included in a letter to Barbaro, the patriarch of Aquileia, to whom he states, that though at the age of ninety-five, he is still in possession of health, vigour, and the perfect use of all his faculties.

Cornaro died at Padua in 1566, when, according to the best authorities, he was ninety-eight years old. His work was very frequently published in Italy, both in the vernacular tongue and in Latin. It has been translated into all the civilized languages of Europe, and was once a most popular book. There are several English translations of it, the best being one which bears the date of 1779. Addison praises the original work in the 'Spectator.' 'This treatise,' he says, 'has been taken notice of by several eminent authors, and is written with such a spirit of cheerfulness, religion, and good sense, as are the natural concomitants of temperance and sobriety. The mixture of the old man in it is rather a recommendation than a discredit to it.' Cornaro's system has had many followers. The best authenticated case we know of its being rigorously and successfully pursued in England is that of Thomas Wood, a miller of Billericay in Essex, to whom a neighbouring clergyman lent the 'Life of Cornaro.' (*Medical Transactions of the College of Physicians.*) The old Venetian does not insist on such extreme abstinence as he practised—both the quality and the quantity of food, he says, ought to depend on the constitution; but he is probably right in hinting that men of all constitutions shorten their lives and weaken their enjoyments by over-eating and drinking.

CO'RNEA. [EYE.]

CORNEILLE, PIERRE, commonly called the father of the French drama; not that he was really the earliest of the French dramatists, for he was preceded by Jodelet, Gamier, and many more, but because he so far excelled his predecessors, that they are now forgotten, while he remains one of the French classics. He was born in the year 1606, at

Rouen, where his father was an advocate. Pierre himself was destined for the bar, and had begun to practise in that profession, in which, however, he had but little success. Having been taken by one of his friends to see a lady of whom the latter was enamoured, he fell violently in love with her himself, an incident which furnished him with the plot of his first comedy *Milete*, produced in 1629, which was followed by the dramas of *Clitandre*, *La Veuve*, *La Galérie du Palais*, and *La Place Royale*, all produced between that time and the year 1636. It appears that Cardinal Richelieu then aspired to be the grand arbiter in matters of dramatic taste. He sketched the plan of a comedy, with which Corneille, although a poet patronized by the Cardinal, had the hardihood to find fault, and this produced a lasting hostility on the part of the priest-prime-minister against the dramatist.

In 1636 Corneille's fame rose at once to its height. M. Chalon had recommended him to study the Spanish dramatists, particularly Guillen de Castro; and it is on the 'Cid' of this author that the celebrated Cid of Corneille was principally founded. This piece delighted the Parisians to enthusiasm; they had seen nothing equal to it, and they looked on it as a complete miracle. The author had before exhibited some tragic power in an earlier work called 'Medée,' but it is not till the production of the Cid that we must look on him as 'le grand Corneille.'

The French Academy, which was founded by Richelieu, was by no means disposed to share the general enthusiasm. They (or rather Chapelain) wrote an elaborate critique on the Cid, in which they ventured to point out some defects, while they allowed the poet genius of the highest order, and rather found fault with the subject of the drama than Corneille's manner of treating it. This critique is in most editions of Corneille's works, affixed to the tragedy of the Cid, under the title of 'Sentimens de l'Académie Françoise sur la Tragi-comédie du Cid.'

Corneille felt himself hurt by an imputation cast upon his inventive powers; it was hinted that he borrowed his plot from the Spanish, because he had not imagination enough to contrive a new one. He long sought for a subject which should silence these aspersions of his enemies, and at last turned his attention to Roman history, from which he drew the plots of his tragedies 'Horace' and 'Cinna,' both produced in 1639. The former fully proves his ingenuity in moulding a complicated story out of scanty materials.

These were followed by 'Polyeucte,' founded on the history of the martyr of that name, which by some is reckoned his chef-d'œuvre. 'La Mort de Pompée,' and 'Le Menteur' (an adaptation of the Spanish comedy 'La Sospechosa Verdad') succeeded, and were followed by a train of pieces with varying success till the year 1653, when the tragedy of 'Pertharite' was produced, and was decidedly unsuccessful. This misfortune disgusted Corneille for a time with the stage, and he turned his attention to other kinds of poetry, and began to versify Thomas à Kempis, 'De Imitatione Christi.' Six years wore off his disgust, and he again turned to the drama: the success of 'Œdipe,' produced in 1659, encouraged him to go on. He even turned his attention to opera writing, and the 'Toison d'Or' remains a specimen of what he has done in that species of composition. The success of this piece was decided, but it was only the flame of an expiring lamp; in vain he wrote fresh tragedies, in vain did his friends laud them to the skies; the public began to suspect that his genius was worn out, and he had ceased to be popular before the production of his last pieces, 'Pulcherie' (1672) and 'Surena' (1674). His latter works have sunk entirely into oblivion. He died in the year 1684, at the age of seventy-eight, having been a member of the Académie thirty-seven years. In private life he was a quiet domestic man, with a bluntness of manners that was almost repulsive. If we may trust his biographers, he had a few small faults, but no vice; his whole pleasure was centred in his own family. He and his brother had married two sisters, and resided together in one house, till death separated them.

It was, we have seen, by the 'Cid,' that Corneille first rose into celebrity; two or three passages of his 'Medée' are occasionally quoted, to show the development of a young poet, but as a whole it is forgotten, and probably would never have been cited, had not its author distinguished himself by his subsequent productions. His early comedies have sunk deservedly into oblivion, being dry tedious pieces of declamation, without point, and founded on a false morality; their only redeeming merit is ingenuity of construction.

If we now peruse the 'Cid,' we shall be at a loss to discover the cause of that enthusiasm which its appearance created in France, when, as it is said, all Paris saw Chimène (the heroine) with the eyes of Rodrigue (the hero). But it must be remembered that the French stage was in a wretched state before the appearance of Corneille; the pieces of his predecessors were for the most part dull and heavy, and without the slightest attempt at delineation of character. As a specimen of these old dramas, we refer to a translation of Garnier's 'Cornelia,' in Dodsley's old plays, which, strange to say, is commended by Ben Jonson. The chief fault found with the 'Cid' by contemporary critics was the selection of the subject. Don Rodrigue, to revenge a blow given to his father, kills the father of Chimene, his mistress, in a duel; she at first makes every effort to accomplish his death, but at length, at the request of the king of Spain, she marries him. It is the contention between love and duty in the heart of the heroine which is the leading feature of the drama. The Aristarchus of the 'Académie' called the lady a monster of filial impiety, and said that she had no right to love Rodrigue at all; the opposite party contended that the preservation of her early love under all circumstances, was perfectly amiable and feminine. This literary battle, indeed, seemed rather to be fought for the morals of the heroine, than the merits of the play. Those who would wish to read the charge and its answer, may turn to the 'Examen' above referred to, and La Harpe's 'Cours de la Littérature.' It should be observed that this drama of the 'Cid' is, by critics of the romantic school, preferred to his other works, as partaking somewhat of that spirit of chivalry which animated their idol, the Spanish drama.

The other most celebrated piece of Corneille's is 'Horace,' the last act of 'Cinna' being reckoned a chef d'œuvre rather than the whole play. Fontenelle's praise of 'Horace,' for the ingenuity of its construction, is unquestionably just. 'Corneille,' says he, 'has but a combat to work upon, that of the Horatii and Curiatii, and out of this scanty subject he constructs a tragedy.' The prospect, indeed, was but barren, yet the tragedian, by giving Horatius a sister of the Curiatii to wife, while his own sister is (according to the old story) betrothed to one of these Curiatii, and by dwelling on the times immediately preceding and pending the combat, has thrown an interest into his piece which was scarcely to be anticipated. Here indeed his praise ends, for the last two acts are occupied by the murder of Horatius' sister, and its consequences; hence, as La Harpe justly observes, they form a separate plot, totally unconnected with the preceding part of the play. The father of Horatius, as an illustration of the stern Roman character, is the most commended by the admirers of this tragedy.

The general censure passed on Corneille's comedies does not extend to 'Le Menteur,' which is one of his later productions, and is an excessively humorous and amusing piece. The English know it well from Foote's version, the 'Liar;' and indeed it was introduced into this country long before the time of Foote; an anonymous translation was acted in 1685. under the name of the 'Mistaken Beauty,' and a subsequent adaptation was written by Sir R. Steele, called the 'Lying Lover.'

The chief merit which is assigned to Corneille by his admirers is his dignity; they allow that Racine may be more elegant, more touching, but in a 'noble ferocity' they say that Corneille stands alone. It must be remembered that when Corneille wrote the French tongue was still in an uncultivated state; he must not therefore be taken as a model of French style, his verse being often defective, and his language disfigured by barbarisms.

Voltaire, on learning that a great-niece of Corneille was entirely without fortune and almost without friends, took her into his house at Ferney, where she completed her education, and in a few years was married by Voltaire to a captain of dragoons. Besides giving her a marriage portion, Voltaire undertook to write a commentary on Corneille, for the benefit of his protégée. The work, which was printed by subscription, and liberally patronized by the French king, the Duc de Choiseul, Madame de Pompadour and others, brought in 50,000 francs, as an addition to the young lady's marriage portion. Voltaire, though a great admirer of Corneille, was not blind to his numerous faults, which he has pointed out at full length in his 'Commentaries' in two vols. 8vo. (vols. 48, 49). Edition of Lequien, Paris, 1826.

CORNEILLE, THOMAS, brother of Pierre, was twenty years younger, being born in the year 1625. He distinguished himself in early life by a comedy in Latin verse, which he composed during his education at the Jesuits' College. Like his brother he began by imitating the Spanish dramatists, and in the course of his career produced no less than forty-two pieces, tragedies and comedies. Nothing could exceed the popularity of some of his plays, which, however, was but transient, as they have, with about two exceptions, been long forgotten. The works by which he is chiefly remembered are 'Le Comte d'Essex,' and 'Ariane,' both tragedies. The former is much censured for the ignorance which it displays of English history: the latter is commended for the character of its heroine: here, however, its merit ends; the rest of the *dramatis personæ* being mere nullities. On the death of his brother, Thomas Corneille took his place in the *Académie*, and contributed to the 'Dictionnaire:' he also assisted his friend De Vise in editing the 'Mercurie Galant,' a noted periodical, and became a member of the Academy of Inscriptions. He died at Andelys in 1709, having shortly before lost the use of his sight.

CORNELIAN CHERRY. [CORNACEÆ.]

CORNET, a commissioned officer in a regiment of cavalry. He is immediately inferior to a lieutenant, and his rank corresponds to that of an ensign in a battalion of infantry.

The word is derived from the Italian *cornetta*, signifying a small flag; and hence, both in the English and French services during the sixteenth and seventeenth centuries, it was applied not only to the officer who had charge of the standard, but to the whole troop, which seems then to have consisted of 100 men and upwards, and to have been commanded by a captain.

CORNET, a shrill wind instrument formed of wood, which seems to have been known from the earliest times, and continued in use till the latter part of the seventeenth century, when it was laid aside for the oboe. In the *Musurgia* of Luscinius is a rude wood-cut of the cornet; but it is represented in a more satisfactory manner in Mersenne's *Harmonie Universelle*, from which it appears that the instrument was blown by a mouth-piece, and that there were treble, tenor, and base cornets. The compass of the first was from A, the second staff in the treble, to E in alt. The last was bent in rather a serpentine form, and reached nearly five feet in length, therefore was deep in tone.

CORNET-STOP, in the organ, is an imitative treble-stop, consisting of five ranks of pipes, in organs on a large scale, each key of the instrument causing all the five pipes to sound at once. These are tuned to a given note, its octave, twelfth, fifteenth, and seventeenth, though the whole together produce the effect of a single note. This is a harsh stop, and is now only used in union with others; but formerly, compositions were written exclusively for it, called *Cornet Pieces*, which, happily, the present improved taste in organ-playing has proscribed.

CORNICE. [CIVIL ARCHITECTURE; COLUMN.]

CORNOUAILLES, a name sometimes given to the town of Quimper, capital of the department of Finistère in France; but more commonly appropriated to a district formerly constituting the domains of a Breton count, who took his title from it. Its extent is not clearly ascertained, some making it co-extensive with the diocese of Quimper; others also including in it the diocese of St. Pol de Léon. It is noticed here only from the coincidence of its name with that of a part of England (Cornwall), from which it is probable that many of the Bretons emigrated.

CORNS are in the first instance merely thickenings of the cuticle, generally of the toes, arising from continued pressure over a projecting portion of bone. While superficial, a corn is moveable, and retains the lamellated structure of the cuticle; afterwards it acquires a base, attaches itself more firmly to the subjacent parts, and becomes a complete corn. 'A bursa or bag of synovial membrane, similar to those bursæ which are of original formation, but of very small size, is formed between the thickened cuticle and the cutis; it is this combination of thickened cuticle with a subjacent bursa which constitutes a perfect corn.' Corns are either hard and dry, which is the case when they are situated externally; or they are soft, when situated between the toes. The inconveniences arising from corns are generally slight; sometimes they are very serious. The bursa under a hard corn is apt to suppurate, and the inflammation, pain, and irritation, are excessive. Tight or improperly-shaped shoes being the primary cause of corns, shoes or boots fashioned to the natural shape of the foot must be worn, and the material of which they are formed should be soft and pliant. To avoid pressure upon a corn already existing, a portion of leather spread with diachylon or other emollient plaster having a hole in it corresponding with the size of the corn may be worn; or if the outer portion of the corn, which is quite insensible, be pared or scraped away, temporary relief is obtained. For a corn which has become very sensible, the application of lunar caustic or concentrated nitric acid is necessary; if there be reason to suspect the existence of an inflamed bursa containing pus, the outer portion must be cut away with the scalpel, and the bursa freely laid open, so that the matter may escape, which will give great relief. If a soft corn become very sensible, as it often does, without an abscess existing beneath, concentrated nitric acid should be applied. Bunions differ from corns, inasmuch as the part affected is generally of greater extent; a bursa is always connected with them, and when inflamed, serum is secreted, which, if pressure and all causes of irritation be avoided, is again speedily absorbed. If the bursa be much inflamed, leeches and fomentations are necessary; and should pus have formed, it must be let out. If the abscess do not speedily heal, nitric acid should be carefully applied to its inner surface. Extirpation of corns has been recommended, but it is not free from danger, and should never be attempted except by a very skilful and dexterous person. A wound or laceration of the tendons or fibrous structures around the joints, is sometimes followed by the most alarming symptoms, even by tetanus and death. Amputation of the toe has been practised. (See Sir B. Brodie's excellent Lecture on Corns and Bunions, *Medical Gazette*, 13th February, 1836.)

CORNU AMMO'NIS, the old Latin name for the now well known fossil shell, the Ammonite. These *Cornua Ammonis*, *Cornes d'Ammon* of the French, were so called from a fancied resemblance to the horns with which the head of Jupiter Ammon was sculptured. In the earlier times their origin was variously accounted for: some thought them petrifications of real rams' horns, taking the name above mentioned in a strict and downright matter-of-fact sense; others thought they were the curled tails of certain animals; some took them for petrified marine worms rolled up; others saw in them coiled serpents, whence they were called *snake-stones*. The legends of the saints invested them with a sacred interest.

> Of thousand snakes, each one
> Was changed into a coil of stone,
> When holy Hilda pray'd.

And the prayer, we are told, was not only followed by petrification, but by decapitation. We believe that there is a similar tradition of St. Keyna, who, when she found herself in a wood at Keynsham, between Bath and Bristol, surrounded by serpents, changed them by the fervour of her devotions into headless stones. Nor were these opinions confined to the mere vulgar. Wormius described Ammonites as petrified adders. Langius considered them to be either the vertebræ of serpents or convoluted marine insects. These notions were not lost on the dealers; and there are few fossil collections which do not even now possess what was called *a perfect Cornu Ammonis*, that is, an Ammonite with a carved serpent's head ingeniously fitted on to the fossil shell by way of aperture. Our limits will not permit us to dwell on this fabulous part of the history of Ammonites further than to observe that other learned men, Torellus Sarayna, Frascatorius, &c., considered them as *lusus Naturæ*, formed by the plastic power of the earth. The antients held them in high estimation as very sacred and of the highest value to the dreamer. Thus Pliny (*Hist. Mund.*, book xxxvi., c. 10), 'Hammonis cornu inter sacratissimas Æthiopiæ gemmas, aureo colore, arietini cornus effigiem reddens, promittitur prædivina somnia representare;' and even to the present time the Indians are said to ascribe extraordinary properties to them.

To the zoologist Ammonites are objects of great interest, and to the geologist they are of the utmost consequence. 'It is easy,' says Mr. Phillips, in his 'Guide to Geology,' (8vo, 1834) 'to see how important, in questions concerning the relative antiquity of stratified rocks, is a knowledge of Ammonites, since whole sections of them are characteristic of certain systems of rocks.' (sec. 82.) Dr. Buckland (*Bridgewater Treatise*, p. 333,) thus comprehensively describes the range of these extinct cephalopodous mollusks: 'The family of Ammonites extends through the entire series of the fossiliferous formations, from the transition strata to the chalk inclusive.'

According to Mr. Owen's system (respiratory), the Ammonites form the fourth genus of his second family (*Ammonitidæ*) of his first order *Tetrabranchiata*, of the class *Cephalopoda*. For Mr. Owen's definition of the Ammonitidæ, see CEPHALOPODA, vol. vi., p. 428. M. De Blainville, in his 'Malacalogie,' thus defines the shell of *Ammonites*.

Shell discoid, more or less compressed; whorls of the spire more or less evident; the aperture with borders a little widened or opened out (evasés); the partitions constantly sinuous; a dorsal siphon.

In the 'Additions and Corrections,' the author states that he had observed at M. Defrance's many beautiful individuals of different species of Ammonites, which had been generously communicated to M. Defrance by M. Deslongchamps, of Caën, which present their apertures in a very complete state, and which he has figured. M. De Blainville further states that he is satisfied that this aperture is not always widened, as he had stated after an English author, and that it is often even rather contracted. The most constant character, he adds, is, that the border or lip is swollen into a thick margin (bourrelet), which is very regularly symmetrical, as in other univalve shells; and that this border, often subauriculated or rather notched at its root, is remarkably sinuous on each side; so that it becomes necessary to add to the character of this genus—'aperture symmetrical, a little widened or contracted, the border or lip thickened into a margin (bourrelet), and often notched or sinuous and auriculated in a variable manner at the origin.' This addition, though correct to some extent, should not be taken for granted as a *general* proposition, for there are certainly exceptions. M. Rang makes the genus Ammonites (Bruguière) embrace the following genera: Orbulites, Planorbites, Planulites, of Lamarck; Ellipsolites, Amalthea, Pelagusa, Simplegas, of De Montfort; Ammonelliptites of Parkinson; Ophiopomorphites of Plott; Globites, Ceratites, and Goniatites, of De Haan.

The following is M. Rang's definition:—

Animal unknown.

Shell discoid, with the spire convoluted on the same plane, either enveloping or not enveloping; whorls contiguous, partitions more or less lobated on their borders, with ramifications or digitations; last chamber occupying the whole of the last whorl of the spire.

M. Rang observes that M. Defrance and M. D'Orbigny have remarked a particular disposition in the form of the borders of the aperture of Ammonites; these borders are sometimes furnished with a margin which is thick and reflected outwards; at other times two elongated tongue-like processes, terminated in a point or digitated, extend from each of the sides; lastly, adds M. D'Orbigny, in some others, a third appendage is given off from the middle of the two tongue-like processes, and bends (se replie) over the entrance of the aperture.

M. Rang proposes three groups:—

1.

Those with an embracing spire (spire embrassante). Example, *Ammonites subradiatus*, &c.

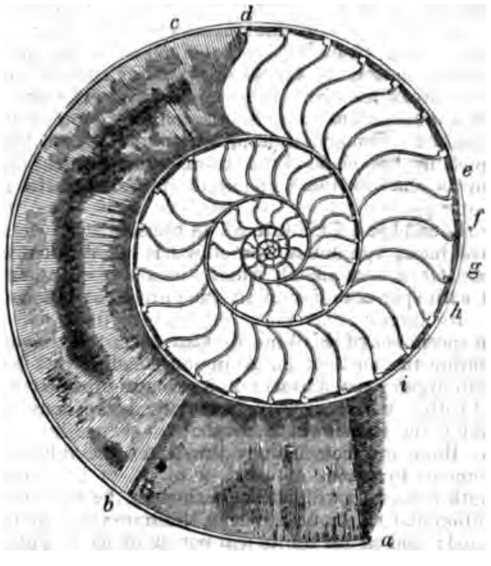
2.

Those with a demi-enveloping spire. Example, *Ammonites Mantellii*, &c.

3.

Those with a spire entirely uncovered. Example, *Ammonites giganteus*, &c.

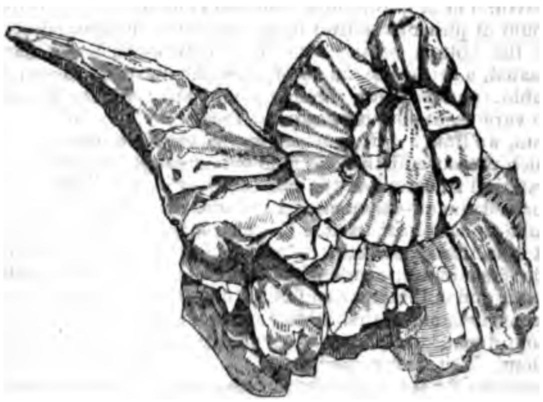
Having given this sketch of the opinions of the authors above quoted, it will be necessary to meet the question whether the Ammonites were external or internal shells. Cuvier and Lamarck thought that they were internal. The former says (*Règne Animal*, last edition) 'La petitesse de leur dernière loge peut faire croire que, comme la spirule, elles étoient des coquilles intérieures.' These are great names, but we must differ from them. Mr. Owen, in his arrangement above quoted, says, 'Animal unknown, presumed to resemble the Nautilus'—'shell external' . . . . . 'the last chamber the largest and lodging the animal;' and this we think was the actual state of things. Dr. Buckland, in his 'Bridgewater Treatise,' says, 'The smallness of the outer chamber or place of lodgment for the animal is advanced by Cuvier in favour of his opinion that Ammonites, like the Spirula, were internal shells. This reason is probably founded on observations made upon imperfect specimens. The outer chamber of Ammonites is very seldom preserved in a perfect state; but when this happens, it is found to bear at least as large a proportion to the chambered part of the shell as the outer cell of the Nautilus Pompilius bears to the chambered interior of that shell. It often occupies more than half, and, in some cases, the whole circumference of the outer whorl. This open chamber is not thin and feeble, like the long anterior chamber of the spirula, which is placed within the body of the animal producing this shell, but is nearly of equal thickness with the sides of the close chambers of the Ammonite.'



[Ammonites obtusus.]

From Dr. Buckland; *a*, *b*, *c*, *d*, outer chamber. It should be remembered that the specimen is apparently imperfect at the aperture. The siphon or tube of communication may be traced from *d*, where it opens into the last or outer chamber, along the edge of the section, *e*, *f*, *g*, *h*, *i*, to the very nucleus of the shell. The waved transverse lines represent the partitions of the chambers.

The large proportion of the outer chamber is very strongly marked in specimens of Ammonites rostratus, that have the aperture perfect or nearly so.



[Ammonites rostratus.]

'Moreover,' continues Dr. Buckland, 'the margin of the mature Ammonite is in some species reflected in a kind of scroll, like the thickened margin of the shell of the garden snail' (bourrelet of the French), 'giving to this part a strength which would apparently be needless to an internal shell. The presence of spines also in certain species (as in Ammonites armatus, A. Sowerbii) affords a strong argument against the theory of their having been internal shells. These spines, which have an obvious use for protection, if placed externally, would seem to have been useless, and perhaps noxious, in an internal position, and are without example in any internal structure with which we are acquainted.'

Mr. De la Beche has proved from the mineral condition of the outer chamber of Ammonites from the lias at Lyme Regis, that the entire body was contained in it, these animals having been suddenly destroyed, and buried in the earthy sediment of which the lias is composed, before their bodies had either undergone decay or been devoured by the then existing crustaceans. Dr. Buckland notices this in his treatise, and adds, that in the Ammonites in question, the outer extremity of the first great chamber in which the body of the animal was contained, is filled with stone only to a small depth (cut of *Ammonites obtusus*, *a* to *b*); the remainder of this chamber, from *b* to *c*, being occupied by brown calcareous spar, which has been ascertained by Dr. Prout to owe its colour to the presence of animal matter, whilst the internal chambers and siphuncle are filled with pure white spar. 'The extent of the brown calcareous spar, therefore, in the outer chamber,' continues Dr. Buckland, 'represents the space which was occupied by the body of the animal after it had shrunk within its shell at the moment of its death, leaving void the outer portion only of its chambers, from *a* to *b*, to receive the muddy sediment in which the shell was imbedded. I have many specimens from the lias of Whitby of the *Ammonites communis*, in which the outer chamber thus filled with spar occupies nearly the entire last whorl of the shell, its largest extremity only being filled with lias. From specimens of this kind we also learn, that the animal inhabiting the shell of an Ammonite had no ink-bag; if such an organ existed, traces of its colour must have been found within the cavity which contained the body of the animal at the moment of its death.'

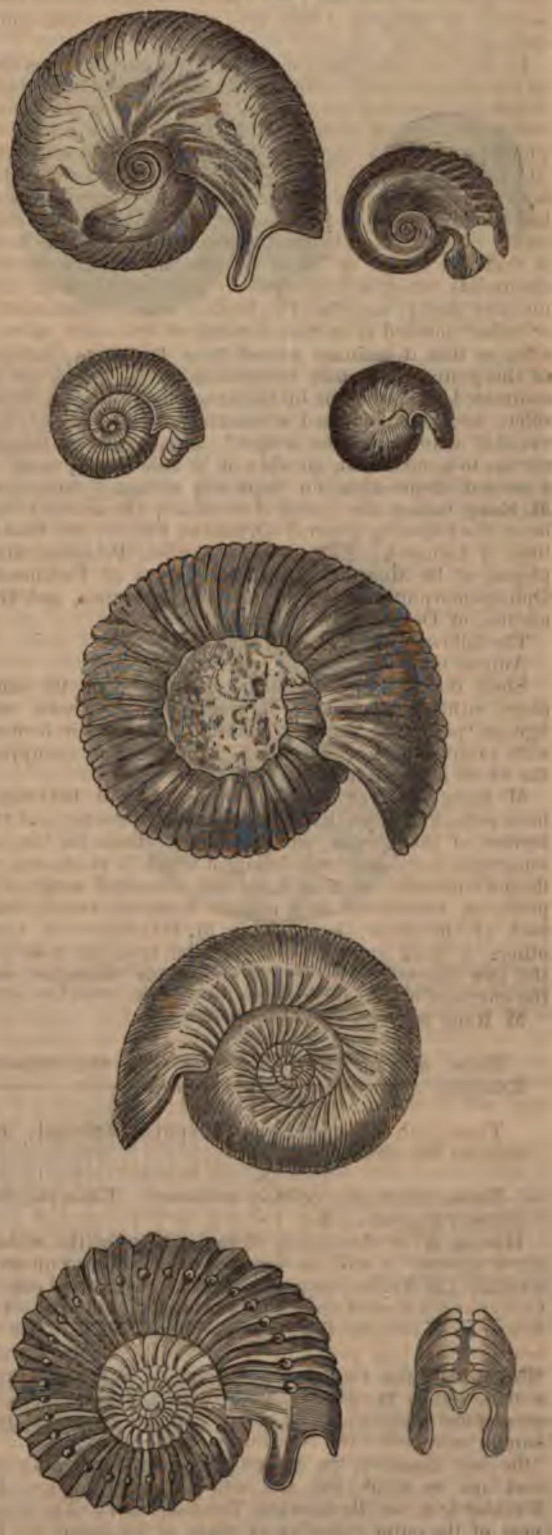
Dr. Buckland very happily illustrates the different arrangements by means of which a union of lightness and strength is secured to the shell both from the external conformation and the mode in which the transverse plates are disposed; and as our limits will not allow us to enter minutely into the subject, we must refer the reader to the 'Bridgewater Treatise' for the interesting details, which show that a more perfect instrument for affording universal resistance to external pressure—an instrument in which the greatest possible degree of lightness combined with the greatest strength was required—could scarcely be imagined, and must confine ourselves to the doctor's summary. 'As the animal increased in bulk, and advanced along the outer chamber of the shell, the spaces left behind it were successively converted into air-chambers, simultaneously increasing the power of the float. This float being regulated by a pipe passing through the whole series of the chambers' (see the cut of *Ammonites obtusus*), 'formed an hydraulic instrument of extraordinary delicacy, by which the animal could at pleasure control its ascent to the surface or descent to the bottom of the sea. To creatures that sometimes floated, a thick and heavy shell would have been inapplicable; and as a thin shell inclosing air would be exposed to various and often intense degrees of pressure at the bottom, we find a series of provisions to afford resistance to such pressure in the mechanical construction both of the external shell and of the internal transverse plates which formed the air-chambers. First, the shell is made up of a tube coiled round itself, and externally convex. Secondly, it is fortified by a series of ribs and vaultings disposed in the form of arches and domes on the convex surface of this tube, and still farther adding to its strength. Thirdly, the transverse plates that form the air-chambers supply also a continuous succession of supports, extending their ramifications, with many mechanical advantages, beneath those portions of the shell which, being weakest, were most in need of them.'

Reinecke*, Von Buch†, Zieten‡, and De Haan§ are among the other moderns who have written treatises on this interesting genus, or have illustrated it; and much information will be found in the works of Parkinson, Schlotheim, James Sowerby (*Min. Con.*), De la Beche, Phillips, and others.

The species are very numerous. De Blainville quotes Defrance for 120 species, adding that he (Defrance) asserts that there are no more, but inquiring on what Defrance rests his assertion. M. Brochant, in his translation of De la Beche's Manual, enumerates 270.

The method of arrangement is various by various authors; but we think that when the subject is better known than it is at present, the shape of the aperture, which varies considerably, ought to be considered a leading character.

[Ammonites with perfect mouths.]



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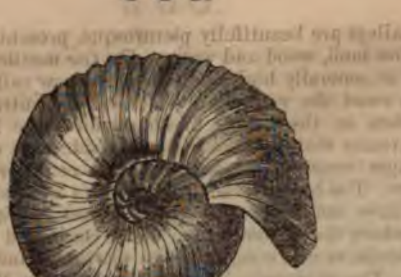
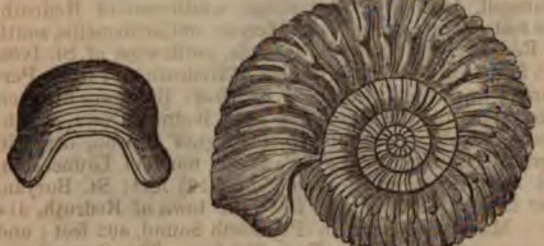
[*] Maris protogæi Nautilos et Argonautos vulgo *Cornua Ammonis* in agro Coburgico et vicino reperiundos descripsit et delineavit, etc., D. I. C. M. Reinecke. Coburgi, 1818, 8vo.

[†] Ueber die Ammoniten in den älteren Gebirgs-Schichten. Gelesen in der Akademie der Wissenschaften, am, 1. April, 1830. 4to. Recueil de Planches de Pétrifications remarquables, par Leopold de Buch. Berlin, 1831, folio.

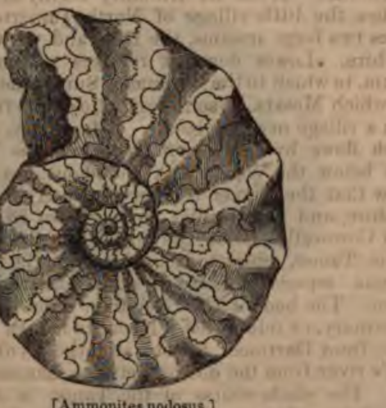
[‡] Die Versteinerungen Würtembergs, &c. Stuttgart, 1830, and following years. Folio.

[§] Specimen philosophicum inaugurale, exhibens monographiam Ammoneorum et Goniatiteorum, etc. 1825. Lugduni Batav.





These cuts, which are copied from De Blainville, will not only give the reader some idea of the shape of the aperture, but also of the external appearance of the shell, while the following, from Dr. Buckland's Bridgewater Treatise, will convey a notion of the concamerations in some of the species. An internal view of a very simple form of these and of the siphon or pipe will be seen in the cut of *Ammonites obtusus*.



[Ammonites nodosus.]

Geological Distribution.—Professor Phillips, in his 'Guide to Geology' (8vo. 1834), thus distributes the Ammonites among the different formations.

SUB-GENERA OF AMMONITES.

	Goniatites.	Ceratites.	Arietes.	Falciferi.	Amalthei.	Capricorni.	Planulati.	Dorsati.	Coronarii.	Macrocephali.	Armati.	Dentati.	Ornati.	Flexuosi.
In Tertiary strata . .														
In Cretaceous system . .	..	..	..	2	4	..	..	..	..	9	14	13	2	3
In Oolitic system . .	..	..	..	22	27	12	26	5	11	11	11	4	5	3
In Saliferous system . .	..	3	12											
In Carboniferous system .	7													
In Primary strata . .	17													

Total, 223 species.

The strata termed primary in Professor Phillips's table are those which Dr. Buckland has included in the lower region of the transition series in his section. (*Bridgewater Treatise*, pl. 1.)

We are indebted to Dr. Buckland for forwarding to us several specimens of Ammonites and some orthocerata from the Isle of Man, where they were collected by Captain Bentham in a small bay near Castletown, in a confined space (of a few yards), about high water-mark, resting on clay slate. The rock in which they were found appears to be transition limestone imbedded in slate. The shells are converted into arsenical pyritēs, and some of them are included in lumps of the same mineral.

Geographical Distribution.—As the Ammonites were evidently principal agents for keeping within bounds the mollusks, &c., the crustaceans, and perhaps fishes of the periods prior to the chalk formation, and belonging to the latter epoch, we should expect to find them widely distributed. Accordingly, they occur in Europe, Asia, and America in strata apparently of the same date. In some instances, the genera and even the species are identical. Dr. Gerard found in the Himalaya Mountains, at an elevation of 16,000 feet, *Ammonites Walcoti* and *Ammonites communis*, fossils that are found in the lias of Lyme Regis. M. Ménard met with one in the Maritime Alps at an elevation of 1500 toises. Their numbers must have been great. M. Dufresne informed Lamarck that the road from Auxerre to Avalon in Burgundy was absolutely paved with them. The individual agency too of some of these carnivorous instruments for preserving the balance of marine animal power must have been of no small importance. Lamarck says that he has seen Ammonites of two feet (French) in diameter. Mr. James Sowerby and Mr. Mantell record Ammonites in the chalk with a diameter of three feet; and Dr. Buckland states that Sir T. Harvey and Mr. Keith measured Ammonites in the chalk near Margate which exceeded four feet in diameter; and this in cases where the diameter could have been in a very small degree enlarged by pressure.

Dr. Buckland is of opinion that the Rhyncholites, or beakstones, which occur so abundantly in the oolite of Stonesfield, in the lias at Lyme Regis and Bath, in the Muschelkalk of Luneville, &c., were the mandibles of Ammonites as well as of fossil Nautili, and there can be no reasonable doubt of the fact.

We must here close a subject on which we could say much; and we leave it the more willingly, because the student will find in Dr. Buckland's Treatise a full and copiously illustrated account of Ammonites, more especially as regards the varied properties of support and the hydraulic action of the siphuncle.[*] *Ammonites heterophyllus*, figured at plates 38 and 39, affords a beautiful example, as the Doctor observes, of the manner in which the mechanical strength in each transverse plate is so disposed, as to vary its support in proportion to the different degrees of necessity that exist for it in different parts of the same shell.

CORNUCO'PIA, or **CORNU-COPIÆ**, the horn of plenty, fabled to have had its origin in the infant days of Jupiter. Ovid, in his 'Fasti' (lib. v. 115-128), tells us that one of the goats of Amalthea, who nursed Jupiter in Crete, broke off its horn against a tree, when the nymph, having wreathed it with flowers and filled it with fruit, presented it to the god. Jupiter, when he came into power, called his nurse to the skies, and made the horn the emblem of fertility. The Greeks called it κέρας 'Αμαλθειας, *the horn of Amalthea*. In his 'Metamorphoses' (lib. ix. v. 82, &c.), Ovid derives the origin of the Cornucopia from a different fable. He speaks of it as the horn of the river god Achelous, broken off by Hercules, and consecrated by the Naiads:—

> 'Naïdes hoc, pomis et odoro flore repletum,
> Sacrarunt.'

The Cornucopia occurs very frequently in the types of antient coins, particularly upon those of Sicily. (See the medal of ARSINOE.)

CORNUS. [CORNACEÆ.]

CORNWALL, an English county, forming the south-west extremity of the island of Great Britain. The form of the county approaches that of a right-angled triangle, of which a line about seventy miles long, drawn E.N.E. and W.S.W. from Penlee Point at the entrance of Plymouth Sound, to the Land's End, may be regarded as the base; another line, forty-two miles long, drawn N.N.W. and S.S.E. from Penlee Point to the north-east corner of the county, as the perpendicular; and a line eighty-one miles long, drawn north-east and south-west from the last-mentioned point to the Land's End, as the hypotenuse. The area of the county, exclusive of the Scilly Isles, is 1330 square miles, being rather less than the area of the triangle above described. Cornwall lies between 49° 55′ and 50° 55′ N. lat., and 4° 9′ and 5° 42′ W. long.

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[*] Geology and mineralogy considered with reference to natural theology, by the Rev. William Buckland, D.D., &c., &c., London, 1836, 8vo. See vol. i., p. 333 to 357, and vol. ii., plates 35 to 42.

The only county with which Cornwall is conterminous is Devonshire, which bounds it on the east (or rather on the E.N.E.): on all other sides it is surrounded by the ocean. The north-west coast is high and rocky. Tracing it from the border of Devonshire, it runs south by west, and forms two very shallow bays (Bude Bay and Widemouth Bay), succeeded by the headlands, Dazard Point, Castle Point, Penkenner Point, and Carnbeak. From Carnbeak the coast runs south-west, and forms several headlands, Tintagell Head being the principal; and several small bays as far as Pentire and Stepper Points, near the mouth of the river Alans or Camel, the entrance of which forms the haven of Padstow. A few miles W.S.W. of these is Trevose Head, the most prominent headland on this side of the county: this is succeeded by Constantine, Watergate, and Towan bays, Towan Head, Fistal, Cranstock, and Holywell bays, Penhale Point, Ligger or Piran Bay, and St. Ives' Bay, Gurnard's Head, Cape Cornwall, Polpry and Peden-Mean-Due points, the last of which is less than a mile from the Land's End. The general direction of the coast from Trevose Head to Cape Cornwall is south-west; from Cape Cornwall to the Land's End due south. Along this side of the county are scattered several islets and insulated rocks, but nothing that is worthy of notice. Off the Land's End are the Scilly Islands, a numerous and not unimportant group. [Scilly Islands.]

The coast from the Land's End to Plymouth Sound is marked by bolder promontories and deeper bays: it possesses for the most part the same character as that just described, but there are more frequent intervals of low and shelving beach. From the Land's End to Mount's Bay, the coast forms a line convex to the ocean, broken by a number of small headlands with intervening coves. Mount's Bay takes its name from St. Michael's Mount, a remarkable insulated rock opposite the town of Marazion, and connected with the main land by a causeway over the sands: Cuddan Point forms the eastern boundary of the bay. From Cuddan Point the coast runs south-east to the Lizard, the most southern point of England: and from thence turning north-east, forms the headlands of Innis Head, Black Head, Chynals Point, Dranna Point, Nare Point, Rosemullion Head and Pendennis Point, which last two form the extremities of Falmouth Bay. Between Nare Point and Rosemullion Head is the wide æstuary of the Helford river. Between Pendennis Point and Zone or St. Ann's Point (the next important headland) is the wide æstuary of the Fal, known by the name of Carrick Road, of which Falmouth harbour and St. Mawes harbour are branches. From Zone Point the coast still runs north-east to Greber Head, forming Gerrans, Veryan, Megavissey, St. Austell and St. Blazey bays, with the intervening headlands Pennare Point, Dodman or Deadman Point (379 feet high), Chapel Point, and the Black Head. From Greber Head the coast runs east to the Rame Head and Penlee Point (which is the entrance of Plymouth Sound), forming Looe and Whitesand bays. The rocks and islets along this coast are too unimportant to require notice.

Launceston, which has commonly been considered as the county town, is on the eastern border of the county; but Bodmin, which has a better title, is more central: it is about 210 miles from London in a direct line W.S.W., or 235 miles by the road through Salisbury, Dorchester, Exeter, and Launceston.

The population of the county by the census of 1831 was 300,938, including the Scilly Islands, or 298,473 without them; the latter number, compared with the area of the county as stated above, gives about 224 inhabitants to a square mile: which is considerably under the average of England and Wales, and still more under the average of England alone. (Arrowsmith's *Map of England and Wales*; *Ordnance Map*; *Population Returns for* 1831; Paterson's *Roads*.)

Surface, Hydrography, Communications.—From the central part of Cornwall, which is the highest, the land slopes towards the sea on each side. The whole surface of the county is irregular. The great post-roads pass over the central high ground, which, being for the most part waste moorland, give travellers a more unfavourable opinion of the soil, than, taken altogether, it deserves: for, in many parts, it is pleasingly diversified by hill and dale; some of the valleys are beautifully picturesque, presenting corn and meadow land, wood and water. On the northern coast the land is generally high, with short narrow valleys: on the south coast the valleys are wider. The central ridge approaches, on the border of Devonshire, the N.W. coast: the streams that flow from its S.E. side have consequently a longer course, and are the most considerable in the county. The height of some of the hills is considerable, but they have not generally striking or picturesque forms, except where they extend down to the coast, and form abrupt headlands, as at Tintagell, Cape Cornwall, and the Land's End. The principal elevations are—Brown Willy, at the source of the river Fowey, 1368 feet; Carraton, or Caradon Hill, north of Liskeard, 1208 feet; Kit Hill, on Hingeston Down, near Callington, 1067 feet; Hensbarrow Down, north-west of St. Austell, 1034 feet; Cadon barrow, near Tintagell, 1011 feet; Carnmarth, south-east of Redruth, 849 feet; Carnmenelez, Carn-Menelis, or Carnbonellis, south of Redruth, 822 feet; Carnminnis, south-west of St. Ives, 805 feet; Carn-Brea, south-west of Redruth, 697 feet; Pertinney, near the Land's End, 689 feet; Bindown, between East Looe and Liskeard, 658 feet; Bodmin Down, south-west of Bodmin, 645 feet; St. Agnes Beacon, near St. Agnes, 621 feet; St. Stephen's Down, north of Launceston, 605 feet; the town of Launceston, 591 feet; St. Buryan, near the Land's End, 415 feet; the town of Redruth, 414 feet; Maker Heights, on Plymouth Sound, 402 feet; and Sennen, near the Land's End, 387 feet. The above elevations are, with one or two exceptions, from the 'Ordnance Survey.'

The principal rivers of Cornwall are the Tamer, with its tributaries; the Fawey, or Fowey; the Fal; the Alan; the Seaton; the Looe; the Hel, or Helford; and the Heyl. The Tamer rises in the moors which form the north-east point of the county, and extend into Devonshire; and flows south-south-east into Plymouth Sound, forming, almost throughout its course, the boundary between Cornwall and Devonshire. It has no tributary worthy of notice, until it reaches the little village of North Tamerton, where it receives two large streams, the Deer and the Claw, from Devonshire. Lower down it receives a more considerable stream, to which in the 'Ordnance Survey' no name is given, but which Messrs. Lysons designate as the river Werington, from a village near its banks. The Attery, a smaller river, which flows by Launceston, falls into the Tamer, about a mile below the Werington; and about the same distance below that the Tamer is joined by the river Lyd, from Devonshire, and a few miles farther down by the river Inny, from Cornwall. Below the junction of the Inny the course of the Tamer, hitherto tolerably straight, becomes more sinuous, especially where it skirts the base of Hingston Down. The bed of the river then widens, and it becomes an æstuary, or tide-water. Near its mouth it receives the Tavy, from Dartmoor forest; and the Lynher or St. German's river from the downs between Launceston and Bodmin. The whole course of the Tamer is about 56 miles; viz. 24 from the source to the junction of the Attery, just below which it becomes navigable; about 21 from thence to the point to which the tide flows; and about 11 miles of tide-water, including Hamoaze, which is the harbour of Plymouth, or rather of Devonport. The length of its principal Cornish tributaries is as follows: the Werrington, about 17 miles; the Attery, about 10; the Inny, about 18; the Lynher, about 22; and the Tidi, a feeder of the Lynher, 9 or 10 miles.

The Fawey or Fowey rises on the east side of Brown Willy, to the right of the high road from Launceston to Bodmin. It flows south-south-east for several miles, and then turning westward receives on the right the rivers St. Neot's and Warleggan, besides a number of brooks: it then turns south, and passing Lostwithiel, falls into the sea at the borough of Fowey. It is not navigable above the point to which the tide flows. Its whole length is about 30 miles; the tide flows about 5 miles up; formerly it flowed higher up.

The Alan or Camel (*i. e.* the Crooked River) rises about 3 miles north-north-east of Camelford, and flows south-by-west past Camelford, until it is joined by the river De Lank, which rises near Brown Willy, and flows through a marshy valley. From this junction the course of the Camel is rather more to the south-west, until it is joined by the united waters of two brooks from the south and south-west: afterwards it flows north-west to Padstow, a little below which it falls into the sea between Pentire Point and Trevose Head, on the north-west coast. Its whole course is about 28 miles, of which about 7 are navigable from the tide flowing up. It receives a considerable tributary (10 to 12 miles long) about 2 miles above where the navigation commences. The mouth of the Camel forms a harbour for ships of 200 tons.

The Fal rises in Tregoss Moor, near the high road from Bodmin to Truro; and flows south, or south-by-west, to Grampound and Tregony, receiving by the way the water of a number of brooks. From Tregony it flows south-west 5 or 6 miles into the Mopus Road formed by the waters of St. Clement's Creek, which rises near St. Michael or St. Mitchell, and flows south-by-west, and of the rivers St. Allen, Kenwin, and another, which meet at Truro, just before they join St. Clement's Creek. From its junction with the Mopus Road the Fal flows southward into Carrick or Carreg Road, where it is joined by a river from the neighbourhood of Redruth. Falmouth Harbour is an inlet of Carrick Road on the west side; St. Mawes Harbour is another inlet on the east Road. The whole course of the Fal is probably about 25 miles, of which more than half is tide-water; the tide also flows up St. Clement's Creek for some distance, up the united channels of the Saint Allen and the Kenwin, as far as Truro, and up Falmouth Harbour as far as Penryn. Vessels of 100 tons can get up to Truro and Penryn. Carrick Road, with its inlets, is reckoned one of the finest harbours in Great Britain.

The Seaton and the Looe are two small rivers, rising not far from Liskeard, and flowing south into the sea: the former on the east, and the latter on the west of the town of Liskeard: the Seaton, which is the longer of the two, is rather more than 10 miles long. The Looe, which falls into the sea between the towns of East Looe and West Looe, is joined near its outfall by the Black Looe. The tide flows for a short distance up both these streams. Another river of nearly similar name (the Loo) which runs by Helston, forms a lake or pool immediately below that town.

The Hel or Helford is a small river, remarkable only for its large æstuary, which penetrates about 4 or 5 miles inland, nearly half the length of the river: the mouth of the Hel is between Nare Point and Rosemullion Point, near Falmouth. The river Heyl, which falls into St. Ives Bay, is about as long as the Hel, and has also a large æstuary. It is indeed only their tide-waters that render the Cornish rivers of any account as means of communication. Except the Tamer, they are not navigable above the point to which the tide flows. The æstuary of the Hel forms a haven for vessels of 200 tons; that of the Heyl, owing to a bar at the mouth, is accessible only to sloops of 50 or 100 tons burthen.

Cornwall has four navigable canals. The Bude and Holsworthy canal, part of the course of which is in this county, runs eastward from Bude Haven, to near the channel of the Tamer; from which point the Bude and Launceston Canal branches off to the south-south-east to Launceston. The chief object of these canals is to facilitate the introduction of Welsh coal, and the carrying of shelly sand from the coast to the interior, to be used as manure. The Liskeard and Looe canal runs south from Liskeard to the æstuary of the river Looe, and is designed to facilitate the transport of timber, coal, manure, and the mineral products of the district. A canal extends about 5 miles east and west from near St. Columb Major to Mawgan Porth, on the coast near Towan Bay: it was intended for the export of minerals, and conveying manure to the adjoining lands, but was never completed, and its channel is now partly filled up.

The mail-road from London to Falmouth passes over a considerable part of the county: it enters it by Poulston bridge, over the Tamer, not far from Launceston, and runs south-west by Launceston, Bodmin, and Truro. A road branches off to the right from this at the village and ex-borough of St. Michael's, and another at Truro; these, uniting at Redruth, proceed by Marazion, or Market Jew, and Penzance to the Land's End. Two other branches run from the neighbourhood of Penryn, and one from Penryn itself, unite not far from that town, and proceed by Helstone to Marazion, where they join the road to the Land's End. Another road from London by Exeter and Tavistock crosses the Tamer at New Bridge, and runs south-west by Callington, Liskeard, and Lostwithiel, St. Austell, and Grampound, to Truro. A branch road from Launceston runs in a circuitous direction by Camelford and Wadebridge to St. Columb: and a road along the coast runs from Mount Edgecumbe or Plymouth Sound to East and West Looe and Fowey. The mail-coach roads are very good.

Geological Character.—The rocks which predominate in Cornwall are among the lowest in the arrangement of the strata of our island, and belong to the primitive and transition classes. The high land which occupies the centre of this peninsular county, and extends from between Launceston and Bodmin on the north-east to the Land's End on the south-west, is composed of granite, which in several extensive districts rises to the surface. The highest parts of this ridge are towards the north-east, and the elevation gradually diminishes towards the south-west; the height at which the granite is found on the surface also diminishes. The granite cliffs of the Land's End are not more than fifty or sixty feet high. Occasional veins or shoots from this granite formation penetrate northward and southward into the superincumbent strata; but they do not generally extend far from the principal masses of granite, nor are they insulated. It may be observed, that the eminences which are formed of granite commonly have their north-east side more abrupt than the south-west. The granite of Cornwall contains numerous metallic veins, both of copper and tin. It is liable to decomposition, to which cause is ascribed the existence of a tract of loose white kaolin or porcelain earth, some miles in extent, near St. Stephen's, between Bodmin and Grampound, and on the south side of the granite range: it is sent to Worcestershire. The decomposition of granite has probably formed those singular phenomena which were once regarded as relics and memorials of druidical superstition, the Logan or Logging Stone, Cheese-wring, &c. St. Michael's Mount, in Mount's Bay, is chiefly composed of granite, split into irregular masses. The fissures which are found in the Cornish granite have led many to suppose that it was stratified; but the supposition is now generally rejected. Granite is termed by the Cornish miners *Grouan*.

The rock commonly reposing on the granite is the *killas* of the miner, the clay-slate of geologists. It appears to have been erroneously designated grauwacké in the Survey of the Geology of Devonshire and Cornwall, by Dr. Berger, in the 'Geological Transactions,' vol. i. pp. 93 et seq. Grauwacké is found, indeed, accompanying the clay-slate, but not to any great extent. On the south or south-east side of the granite formation, the strata dip south-east at an angle of about seventy degrees; on the opposite side of the granite formation the dip is nearly north-east. The killas is traversed by veins or dykes of porphyritic rocks, termed by the miners *Elvan*. These dykes (or channels, in the language of the miners) are rarely found in the granite; their general direction on the surface is east and west, or rather, according to Mr. Greenough's Geological Map, north-east and south-west; they vary from a few fathoms to fifty and even eighty fathoms in thickness; and in some cases are continuous through a long tract of country. The metallic veins, both of tin and copper, commonly pass through them, but are for the most part narrower when in the *Elvan* than when in the superincumbent and subjacent rocks. Roofing slate is quarried in this formation (the killas) near Tintagell Head. What is termed granite of the newer formation, but which is not true granite, is found in Cornwall resting on the clay-slate. A substance approaching to gneiss sometimes intervenes between the granite and the clay-slate.

The metallic veins which contain copper or tin, or both, run usually east and west, and penetrate both the granite and clay-slate; those which contain lead, silver, cobalt, or antimony, run north and south, with little exception, and are believed to be always in the clay-slate.

The Lizard Head and the neighbouring country are composed of serpentine: the relative geological position of this rock and the clay-slate has not been ascertained. The serpentine is accompanied by other rocks, mica slate, diallage, metalloïde, and greenstone. Near the Lizard it incloses veins of soap stone, which, when first raised, is so soft that it may be kneaded like dough, but becomes friable after being exposed to the air; it is used in the manufacture of porcelain. The serpentine incloses and passes into asbestus, and small quantities of native copper have been found in it.

Thin beds of limestone are found in Cornwall, alternating with killas, or clay-slate; it is of a blue colour, and contains veins of calcareous spar.

Copper and tin are the most important minerals of Cornwall. The extent of the metalliferous veins is unknown, as well as the depth to which they extend: no miner has yet seen the end or bottom of a vein. Their width varies much, from the thickness of a sheet of paper to thirty feet; but they are usually from one to three feet in thickness. The ores of copper or tin do not often occur together in the same vein at any great depth. If tin be discovered first, it sometimes disappears, after sinking 100 feet more, and is succeeded by copper; in others, tin is found to the depth of 1000 feet beneath the surface, almost without a trace of copper; if copper be first discovered, it is very rarely, if ever, succeeded by tin. It is seldom that either ore is found nearer to the surface than 80 or 100 feet. If a copper vein meets one of tin, it usually passes through it, and heaves it out of its course. The veins not metalliferous usually pass through the tin and copper veins, or lodes, as they are termed: these non-metalliferous veins have their course usually north and south.

The copper and tin mines, excepting some mines, chiefly of tin, near Callington, are south-west of the rivers Alan and Fowey. The chief mining district extends from St. Agnes on the north coast by Redruth to the neighbourhood of Helston and Marazion; and some mines are worked west of Marazion. St. Austell is in the centre of another but less extensive mining district near the south coast. (*Transactions of Geological Society;* Phillips's *Selection of Facts as to the Geology of England and Wales;* Greenough's *Geological Map of England and Wales.*) Some of the more remarkable natural curiosities of the county will be noticed under a subsequent head.

The lead-mines of Cornwall are not numerous, though the ore has been discovered in many parts of the county. Some silver is obtained from the veins of lead, and from a copper mine called Huel Mexico, between St. Agnes and St. Michael. Iron ore is also obtained, and shipped to Wales. Zinc, antimony, cobalt, and arsenic are procured, as well as some other of the semi-metals. Freestone of different qualities is quarried.

Agriculture.—Cornwall, being situated between two seas, is more subject to variations of weather than most other counties; the mountains attracting the clouds, charged with moisture, which the prevalent west winds bring from the Atlantic. From this cause, the harvest is not in general so early as in the more inland counties, which are in a more northern latitude by two or three degrees. The soil of the mountainous districts is extremely barren and unproductive; but in a few of the vales a tolerably rich soil is found, well adapted to the growth of corn, roots, and artificial grasses. The substratum of the whole county being rocky, and slate being the predominating rock, the surface consists chiefly of an argillaceous earth produced by the decomposition of the slate, mixed with various portions of vegetable matter accumulated in the course of ages. This soil is not naturally stiff or retentive of moisture, but rather a loose and porous soil. Excess of wet will sometimes convert it into a soft mud, where the substratum is not sufficiently porous to allow the water to percolate freely; but generally the land is not of a cold wet nature, like the clays in the midland counties. The most fertile lands are found from Endellion to St. Columb, on the north coast, in the peninsula which terminates in the Lizard Point, the neighbourhood of Burian and St. Germain's, the lands near the Fawey, and a great part of the hundred of Stratton. The rest of the county is comparatively barren. As may be expected from the nature of the soil, there is no great extent of natural meadows, and the want of them is made up by laying down part of the arable land with artificial grasses. This, however, is not done in the perfect and profitable manner adopted in the northern part of Britain; but the second or third crop of corn has grass-seeds sown amongst it when the land is nearly exhausted and full of noxious weeds. The scanty pasture thus produced is neither profitable to the farmer, nor does it serve to restore much fertility to the soil. The system of paring and burning the surface is adopted after the land has been some time in pasture; and with the help of sea-sand, which contains a great portion of comminuted shells, sea-weed, lime, and occasional manuring with pilchards, the land is brought into a state in which it may bear two or three moderate crops of corn. This at least is the old Cornish and Devonshire system, and is still adhered to by many.

Amongst the varieties of grain raised in Cornwall, we may notice the naked barley, which is there called *Pillez.* It is sown in the western part of the county for the purpose of fattening pigs and poultry, and likewise for making gruel to fatten calves. It bears nearly the same price as wheat. If the word be of Cornish origin, as is asserted, meaning *bald,* it would indicate that this variety of barley, highly praised by the French agriculturists under the name of *orge pillet,* has been originally introduced into France from Cornwall. It is highly productive, and well worthy of being introduced into other parts of the country.

The soil and climate of Cornwall are peculiarly favourable to the growth of potatoes, of which two abundant crops are sometimes produced in one season, an early crop taken up in June, and a second in October. The early crop has been known to produce 100 sacks per acre, and the second or main crop twice that quantity. This of course was in a deep and highly-manured soil. In many leases the farmer is restricted from growing potatoes except for his own use, than which nothing can be more absurd, as it deprives the farmer of a means of paying a higher rent, and cultivating his farm to advantage. The only condition should be the purchasing lime and manure in proportion to the potatoes raised and sold.

The principal cattle in Cornwall are of the Devonshire breed. The old Cornish breed, which was a small black mountain breed, is nearly extinct, as are likewise the small Cornish sheep: they have been superseded by better breeds. In no county are oxen more generally used for the plough than in Cornwall. Horses were formerly used only to carry loads on their backs. Good roads and the use of carts and waggons are comparatively new improvements, and by no means general. But there is a very simple and light wain peculiar to this county, which is deserving of notice. It has no sides like a waggon, but hoops over the wheel to keep the load from impeding their motion. It has some distant resemblance to the light waggons used in the mountainous part of Switzerland. The implements of husbandry are either of a rude construction or adopted from other districts. The Cornish plough is simple, and has a straight mould-board: where four or six oxen are put to a plough, the draught is not much considered. To prevent the breaking of the beam, in case stones are met with under the surface, the oxen are attached by a wooden pin, which breaks on any sudden check, acting as a kind of safety-valve.

Leases are generally for three lives, renewable on the death of one of the lives by paying a fine; a kind of tenure between a renter and a proprietor. A term of years is preferable, as being more certain. Farms let at rack-rent are let for seven, fourteen, and twenty-one years, as in other counties.

The county is rather bare of trees. Forests probably once existed, but they have now disappeared. Young plantations are much exposed to the sea winds, except where sheltered in valleys. Many proprietors, however, have planted on a large scale; and forest trees are beginning to rear their heads on many eminences, to the great improvement of the face of the country.

In the mining districts the land is naturally barren; but many spots have become clothed with verdure, and are cultivated by the miners, to whom spots of barren soil have been let at a low rent, on condition of their building habitations for themselves and families.

Improvements in agriculture are chiefly introduced by proprietors who occupy their own land. The common farmers, who are not men of capital nor enterprise, prefer following the routine of their forefathers. Large commons give a facility for keeping cattle without much expense, and this is seldom favourable to an industrious cultivation of arable land.

The county is however advancing slowly but steadily towards an improved system of cultivation.

The following are the principal fairs held in Cornwall:—Bodmin, January 25; Saturday after Midlent Sunday; Saturday before Palm Sunday; Tuesday and Wednesday before Whit Sunday; Dec. 6. Bolingey, March 16. Boynton, Aug. 18. Boscastle, Aug. 5; Nov. 22. Camborne, Feb. 24; March 7; Whit Tuesday, June 29; Nov. 11. Camelford, Friday after March 10; May 26; July 17; Wednesday after Michaelmas-day. East Looe, Feb 13; July 10; Sept. 4; Oct. 6. Falmouth, Aug. 7; Oct. 10. Five

Lanes, Monday week after Jan. 24; last Thursday in October. Fowey, Shrove Tuesday; May 1; Sept. 10. Grampound, Jan. 18; June 11. Goldwithney, Aug. 5. Gweek, nearest Monday to Feb. 20; June 1; nearest Wednesday to Aug. 7; Sept. 22; Oct. 2. Helstone, Saturday before Midlent Sunday; Saturday before Palm Sunday; Whit Monday; July 20; Sept. 9; Oct. 28; Second and Third Saturday before Christmas Eve. Kellington, May 4; Sept. 19; Nov. 12. Kilhampton, Holy Thursday; Three weeks after Aug. 26. Launceston, First Thursday in March; Third Thursday in April; Whit Monday; Old Michaelmas-day; Nov. 17; Dec. 6. Liskeard, Shrove Monday; Monday before Palm Sunday; Holy Thursday; Aug. 15; Oct. 2. Lostwithiel, July 10; Sept. 4; Nov. 13. Marazion, Sept. 29. Menheniot, April 23; June 11; July 28; First Friday in December. Padstow, April 18; Sept. 21. Penryn, Wednesday after March 6; May 12; July 7; Dec. 21. Penzance, March 25; Thurday after Trinity Sunday; Sept. 8; Thursday before Advent Sunday. Redruth, Easter Tuesday; May 2; Oct. 12; Nov. 3. St. Austell, Maundy Thursday; Whit Thursday; First Friday after July 23, and Oct. 16; Nov. 30. Saltash, Feb. 2; July 25. St. Blazey, Feb. 2. St. Columb, Thursday after Midlent Sunday; June 9; Thursday after Nov. 12. St. German's, May 28, Aug. 1. St. Ives, Saturday before Advent. Stratton, May 18, Nov. 8; Dec. 11. Summercourt, Holy Thursday; July 28; Sept. 25. St. Laurence, Aug. 21; Oct. 29. Tregony, May 3; July 25; Nov. 6. Treganatha, May 6; Aug. 6. Truro, Wednesday in Midlent; Whit Wednesday; Nov. 19. Wadebridge, May 12; June 22; Oct. 10. Week, St. Mary, July 29; Sept. 15; Wednesday before Christmas-day. West Looe, May 6.

Divisions, Towns, &c.—Cornwall was formerly divided into seven hundreds—Conarton, Fawiton, Pawton, Rialton, Stratton, Tibesta or Tibesterna, and Winneton or Winnenton. There are now nine hundreds; Stratton hundred and East hundred, on the east along the bank of the Tamer; Lesnewth and West hundreds, to the west of these; Trigg hundred, to the west of Lesnewth; Pyder and Powder hundreds, west of Trigg and West hundreds; and Penwith and Kerrier at the western end of the county. In the above enumeration, when two hundreds are mentioned together, the most northerly is named first. According to Dr. Borlase, it is not easy to discover the limits of the antient divisions, or to reconcile them with the present. He considers that Conarton included the modern Penwith, and Tibesta the modern Powder; Winnenton the modern Kerrier, and Stratton the modern Stratton, Lesnewth and Trigg; Fawiton the modern East and part of West; Pawton, the remainder of West and part of Pyder, and Rialton the rest of Pyder.

The number of parishes according to Camden is 161; according to others as mentioned by Carew, 180; the last population returns give 205, including the parish of Maker, which is partly in Devonshire, and also the parish of St. Mary, which comprehends the Scilly Isles; and counting as one the parishes of St. Erney and Landrake, which in the population returns are given as united.

The number of market towns is thirty, viz.:—St. Agnes, St. Austell, Bodmin, Boscastle, Callington, Camborne, Camelford, St. Columb Major, St. Daye, Falmouth, Fowey, Grampound, Helston, St. Ives, Launceston, Liskeard, East Looe, Lostwithiel, Marazion, St. Mawes, Mevagissey, Padstow, Penryn, Penzance, Polperro, Redruth, Saltash, Stratton, Tregony, Truro. Of these, St. Austell near the coast of the English Channel (population in 1831, 8758); Bodmin, near the centre of the county (pop. in 1831, 3782); Falmouth on Falmouth Haven (pop of parish in 1831, 7284); Helston on the river Loo (pop. in 1831, 3293); St. Ives on St. Ives' Bay (pop. in 1831, 4776); Launceston on a feeder of the Tamer (pop. in 1831, 2231); Liskeard, between the Seaton and the Looe (pop. in 1831, 4042); Penryn near Falmouth (pop. in 1831, 3521); Penzance, near the Land's End (pop. in 1831, 6563); Redruth (pop. in 1831, 8191); Truro (pop. in 1831, 8468); are of sufficient importance to require notice in distinct articles.

St. Agnes is on the N.W. coast, in the hundred of Pyder, between Padstow and St. Ives, 260 or 261 miles from London by Salisbury, Dorchester, Exeter, Lauceston, Bodmin, and St. Michael. It is a small town; the market, for which there does not appear to be any charter on record, has been held from time immemorial for all sorts of wares and provisions except corn. Thursday is the market day. The parish comprehends an important mining district, and had a population of 6642, in 1831. There is a harbour at Trevenaunce, in this parish, which has been much improved of late years; the pilchard fishery has been established here since the beginning of the present century. St. Agnes was anciently called Breanick or Bryanick.

St. Agnes is a parochial chapelry, united with the vicarage of St. Perran-in-Zabulo or Piranzabuloe. The two are stated to produce 419*l.* net yearly revenue, and are in the gift of the dean and chapter of Exeter, in whose peculiar jurisdiction they are. In a dingle called Chapel Combe was an antient chapel called Porth Chapel, the ruins of which were taken down 1780; there are the remains of an antient chapel at Malow or Morlah, in the parish of St. Agnes. There are a free-school, a sunday-school, and three dissenting places of worship. Opie, the painter, was born at St. Agnes.

St. Agnes Beacon is on a pyramidal hill near the town, 621 feet above the level of the sea; it is formed out of an antient cairn or tumulus, and was used as a beacon during the alarm of invasion in the beginning of the present century.

Boscastle, (which name is a corruption of Bottreux castle,) is in the hundred of Lesnewth, and on the north-west coast, not far to the north-east of Tintagell Head. It is a poor little place, but in a very romantic situation. The castle from which it takes its name, is no longer standing. It has a weekly market.

This little town is partly in the parish of Forrabury, a rectory (net annual value 70*l.* with a glebe house), and partly in that of Minster, a rectory (net annual value 224*l.*), both in the diocese of Exeter and archdeaconry of Cornwall, and in the gift of T. J. Phillips, Esq. The joint population of the two parishes does not exceed 855. There is a pier at Boscastle, to which vessels come with coals. Near the market-place are the remains of an antient church or chapel, dedicated to St. James, also some remains near the church of Minster, (which is remote from the town) of a former cell of Black or Benedictine monks dependent upon an abbey at Angers in France.

Callington is in the hundred of East, and on the road from London by Tavistock to Liskeard, Lostwithiel, St. Austell, and Truro; 216 miles from London, and above 40 from Truro. The situation of the town is low and unpleasant, at the foot of Hingston Down, and not far from the Lynher, a feeder of the Tamer; and the buildings, with the exception of the church, are mean and unimportant; the houses are chiefly arranged in one broad street. The church, or rather chapel, was almost wholly rebuilt about the middle of the fourteenth century, by Nicholas de Asheton or Assheton, serjeant-at-law. Some cloth is manufactured here. There is a market on Wednesdays for corn and provisions. Some mines are worked in the neighbourhood. There are two dissenting places of worship. The population in 1831 was 1388.

Callington is a perpetual curacy, held with the rectory of Southill; their joint net annual value is 748*l.* with a glebe house; they are in the diocese of Exeter and archdeaconry of Cornwall, and in the gift of Lord Ashburton.

This was one of the boroughs disfranchised by the Reform Act. It was the last town in Cornwall admitted to the right of sending members, not having acquired that privilege till 1585.

Camborne is in Penwith hundred, and on the road from London by Redruth to St. Ives; 3½ miles from Redruth, and 265 from London. It is neatly built, in the midst of the mining districts: the country around affords some extensive and delightful prospects. The church is a fine specimen of the granite churches of this county, built in the perpendicular English style: there is a good south door under a porch, a modern south chapel, and a modern font. (Rickman's *Gothic Architecture.*) There are places of worship for different classes of Methodists. The market, established in 1802, is considerable: it is held on Saturday: the market-house was built by Lord De Dunstanville, of the parish. The population, in 1831, was 7699.

The living is a rectory (net annual value 790*l.* with a glebe house), in the diocese of Exeter and the archdeaconry of Cornwall, and in the gift of Lord De Dunstanville.

Camelford is in the hundred of Lesnewth, and on the road leading from Launceston by Wadebridge to Padstow, 228 miles from London, and 14½ from Launceston. It is described as an ill-built town, in a situation 'as dismal as can well be imagined.' The streets, however, are broad and well paved; and there is a town-hall, which was built about 30 years since by the Duke of Bedford. The river Camel, which rises about four miles to the N.N.E., flows through the town, and gives name to it. The parish church is at Lanteglos, more than a mile south-west of the town. There is an endowed school. The population of the parish, in 1831, was 1359. There is a market on Friday for corn and provisions. The town was made a free borough by Richard, earl of Cornwall, better known by his subsequently acquired title of King of the Romans, brother of Henry III. The present corporation was incorporated by a charter of 25 Charles II. From the time of Edward VI. the borough sent two members to the House of Commons, who were elected by the corporation and a few freemen. Camelford was disfranchised by the Reform Act.

The living of Lanteglos is a rectory, united with the neighbouring rectory of Advent; their joint annual value is 474*l.* with a glebe house: they are in the diocese of Exeter and the archdeaconry of Cornwall: the patronage is in the king as duke of Cornwall. There was formerly a chapel in the town of Camelford; it is now in ruins. The petty sessions for the hundred are held here. The neighbourhood of Camelford is supposed by some to have been the scene of the battle in which King Arthur fell; and of another fought in 823 between the Britons and the West Saxons under Egbert.

St. Columb Major is in the hundred of Pyder, on a rivulet which flows into the sea between Trevose Head and Towan Head, and a little to the right of the main road from London by Launceston and Bodmin to Truro; 246 miles from London and about 11 from Bodmin. It is a small place, but pleasantly situated, being on the slope of a hill which commands some interesting prospects. The buildings are antient, and the town for the most part ill paved. There is a spacious cross church, the interior of which exhibits some curious specimens of early workmanship and numerous monuments: there was formerly a chantry attached to this church. There are meeting-houses for the Wesleyan and Calvinist Methodists. There were in antient times four free chapels in the parish, which is very extensive, comprehending 11,680 acres, or more than 18 square miles. The population in 1831 was 2790. There is a market on Thursday, and, in the summer, one also on Saturday. The living, a rectory, is of the yearly value of 1296*l.* with a glebe-house: it is in the diocese of Exeter and archdeaconry of Cornwall.

St. Daye is in the parish of Gwennap, in the hundred of Kerrier: it is between Truro and Redruth; 261 or 262 miles from London, and about 2 miles from Redruth. It appears to have been of more consequence in former times, but had fallen much into decay: of late years it has greatly recovered, owing to the increase of the mining population in the neighbourhood. There was formerly a chapel, of which there are now no traces: this chapel is said to have been much resorted to by pilgrims in former days, and from the resort of these pilgrims arose a market, which continued to be held without any charter: this market was however given up. The present market, which is held on Saturdays for butchers' meat and other provisions, was established some years since for the benefit of the miners. The parish of Gwennap, which is rather large, contained in 1831 a population of 8539, principally consisting of miners.

The living of Gwennap is a vicarage (net annual value 631*l.* with a glebe-house) in the diocese of Exeter and archdeaconry of Cornwall, and in the gift of the dean and chapter of Exeter. There is near St. Daye a curious amphitheatre of rude construction, supposed to have been of British origin; it was selected by Wesley as a place for public preaching, and is still used by his followers at some of their anniversaries.

Fowey, in the hundred of Pyder, is on the right or west bank of the river Fowey, near its mouth, 240 miles from London, through Tavistock, Callington, and Liskeard, or 243½ miles through Plymouth and East Looe. The scenery around this town is very picturesque. The rocks about Polruan, on the opposite side of the river (which here expands into a good haven), rise to a considerable height, and are broken into rude cliffs and bold promontories. At the mouth of the haven are the ruins of two square stone forts or blockhouses, one on each side, built in the reign of Edward IV. to protect the entrance. They were provided with port-holes for cannon, and had apparently four floors: the walls are six feet in thickness. The harbour is now defended by two modern batteries, and by a fort, called St. Catherine, which was built in the reign of Henry VIII. The town is built in a very straggling manner, the houses extend a considerable way along the haven, and the streets are so narrow and full of angles as to be almost impassable for carriages. Most of the buildings are of stone. The church is a spacious and lofty fabric of the perpendicular English style of architecture: it was rebuilt, or at least much altered about 1466. There was formerly in the town a chapel called St. Catherine's Chapel, which gave name to St. Catherine's Hill: it existed in Leland's time. There is a spacious market-house, with a town-hall over it, and a public walk overlooking the town and harbour.

The population of Fowey in 1831 was 1767. The chief business of the town consists in catching and curing pilchards: this fishery employs many vessels. Fowey is a corporate town; the corporation consists of a mayor, recorder, eight aldermen, and a town-clerk. Fowey sent members to parliament from the time of queen Elizabeth up to the passing of the Reform Act, by which it was disfranchised. The living is a vicarage, of the annual value of 179*l.*, with a glebe-house, in the diocese of Exeter and archdeaconry of Cornwall. There is a market on Saturday. There are two free-schools, and an almshouse for eight poor widows. The harbour has excellent anchorage, and is always safe.

Fowey was antiently a place of greater importance than it is now. The townsmen acquired wealth by feats of war and by piracy in the wars of Edward I. and III., and Henry V., and their wealth enabled them to increase the commerce of the town to a great extent. Fowey furnished more ships to the fleet of Edward III. before Calais than any other port in England, and more mariners than any other port except Yarmouth. About the same time the Fowey men had a sharp battle with the Rye and Winchelsea men, because they (the Fowey men) would 'vale no bonet, being required:' the Fowey men obtained the victory, and hence rose the name of 'the gallaunts of Fowey.' The French burnt the town in 1457. When peace was made between England and France in the time of Edward IV., the Fowey men still kept up hostilities, for which the king ordered their fleet to be confiscated. The possession of the town was repeatedly contested in the struggle between Charles I. and his parliament.

Grampound is in the parishes of Creed and Probus, in the hundred of Powder, 248 miles from London, by Tavistock, Liskeard, and St. Austell. The river Fal flows through the town, the greater part of which is to the east of that river, and consists of one main street on the declivity of a hill. The town did not contain in 1831 more than 113 houses, and 715 inhabitants. The parish church is at Creed, a mile from the town, but there is a small chapel of ease in the town, and a granite cross. The market is inconsiderable: it is held on Saturday. There is a corporation, consisting of a mayor, eight aldermen, a recorder, and town-clerk. Grampound sent members to parliament from the reign of Edward VI. until 1821, when it was disfranchised for bribery. The living of Creed (or St. Creed,) is a rectory of the net annual value of 351*l.*, with a glebe-house, in the diocese of Exeter and archdeaconry of Cornwall. Grampound has been supposed, but with little reason, to have been a Roman station.

East Looe is in the parish of St. Martin, in the hundred of West: it is on the left or east bank of the river Looe, which here falls into the sea; 234 miles from London by Plymouth. It is built on a flat piece of ground between the river Looe and the sea, and is described as a labyrinth of short narrow dirty alleys, above which rises the low embattled tower of a little chapel of ease. On the land side rises a high steep hill, over which the road leads into the town. East Looe is united with West Looe on the opposite side of the river by a bridge of thirteen, or, according to other accounts, fifteen arches: this bridge is 141 yards long, but only 6 feet two inches wide: there was formerly upon it a chapel or oratory dedicated to St. Anne. The number of houses in 1831 was 167: the inhabitants were 865. They are chiefly engaged in the pilchard fishery. The harbour, formed by the mouth of the river, admits vessels of 100 tons, and is protected by a battery of ten guns. There is a market on Saturday. The town was incorporated by Queen Elizabeth; the corporation consists of a mayor, recorder, and eight burgesses, and an unlimited number of freemen. It returned members to parliament from the time of Elizabeth to the passing of the Reform Act, by which it was disfranchised. The election was in the mayor, burgesses, and freemen. There is an endowed free-school for teaching mathematics, especially those branches connected with navigation. There is an endowment of 27*l.* per annum attached to the chapel of ease, which is held with the living of St. Martin.

The living of St. Martin is a chapelry of the annual value of 481*l.*, with a glebe house, in the gift of the duke of Cleveland and the earl of Sandwich. It is in the diocese of Exeter, and the archdeaconry of Cornwall.

East Looe was formerly of much greater importance: it united with Fowey in sending a member to a council of trade held at Westminster in the reign of Edward I., and furnished 20 vessels and 315 men to the fleet of Edward III.

Lostwithiel (otherwise Loswithiel and Lestwithiel) is in the hundred of Powder, on the west or right bank of the Fowey, 234½ miles from London, by Tavistock and Liskeard. The number of houses in 1831 was 217, chiefly of stone, and covered with slate, of which large slabs are quarried in the neighbourhood. The streets are narrow and roughly paved. The church is a curious edifice, with a tower, in the early English style, and an octagonal lantern and spire of decorated English: there is a fine east window. The aisles are of later date. Within the church is a singular octagonal font. Near the church is an antient building said to have been a palace of the dukes of Cornwall. There is a town-hall, in which the Epiphany and Midsummer sessions for the county are held; the county members were also elected here until the division of Cornwall by the Reform Act. There are a grammar-school and a writing-school, supported by the corporation, and a school endowed by the trustees of Mr. St. John Eliot's donation. The market is on Friday. The population of the parish in 1831 was 1548: but the borough extends beyond it into the parish of Lanlivery.

The corporation of Lostwithiel consists of seven capital burgesses, one of whom is annually elected mayor, and seventeen assistants, or common-councilmen. The borough sent members to parliament from the time of Edward I. until it was disfranchised by the Reform Act.

The living is a vicarage of the net annual value of 96*l.*, in the diocese of Exeter and the archdeaconry of Cornwall.

Lostwithiel was made a free borough by Richard earl of Cornwall and king of the Romans. Edmund, earl of Cornwall, son of Richard, was also a great benefactor of this town, conferring upon it several important privileges, some of which however were lost upon his death. In the civil war of Charles I. and the Parliament, the Royalists under Sir Richard Grenville were defeated in a skirmish near Lostwithiel by the Parliamentarians. Restormel castle, in the parish, was however soon afterwards taken by Sir Richard Grenville, and the earl of Essex, commander-in-chief of the Parliamentarians, retired from Lostwithiel, where he had his quarters, to Fowey, where his infantry was obliged to capitulate, though on very favourable terms.

Lostwithiel is, by some antiquaries, considered to have been a Roman station: Camden and Borlase fix here the Ουξελα (Uxela) of Ptolemy, which later antiquarians fix on the Parret, in Somersetshire.

Marazion, or Market Jew, is in the hundred of Penwith, on the coast of Mount's Bay, 281 miles from London, through Exeter, Launceston, Bodmin, Truro, and Helston; and 15 miles from the Land's End. This town is built on the slope of a hill, which rises towards the north and shelters it from cold winds. The mildness of temperature which results from its situation, renders the town and neighbourhood inviting to invalids, though these advantages are partly counterbalanced by the quantity of rain. The town contained 260 houses in 1831, and had a population of 1393. The parish church (that of St. Hilary) is two miles distant.

There are two dissenting places of worship, if not more. This town was formerly of more importance than it is now. At present there is one market held on Saturday, and well supplied. Ready-made shoes are sold in considerable quantities. The chief trade of the town consists in the importation of timber, coals, and iron, for the use of the neighbouring mines. The origin of the popular name of this town, Market Jew, has been much disputed: some have supposed it had at an early period a market to which foreign Jews came to buy tin; others that the name was derived from a market held on Thursday (*die Jovis*); it more probably has arisen from a popular corruption of the antient name, which appears to have been variously written, Marchadyon, Merdresein, Marghasyon, and Marghasiewe, from which last Market Jew seems to have sprung. It appears to have been burnt by the rebels under Humphrey Arundell of Lanherne, in 1549, and most of the public buildings and dwelling houses lay in ruins till long after.

Marazion has a corporation consisting of a mayor, eight burgesses, and twelve capital inhabitants. It appears to have elected two members of parliament in the year 1658, but it does not appear that they ever took their seats: it is thought to have had representatives at an earlier period.

The parish of St. Hilary, in which Marazion stands, had in 1831 a population of 1728, besides the population of the town, making 3121 in all: many of these are engaged in mining. The living is a vicarage in the diocese of Exeter and archdeaconry of Cornwall, of the net annual value of 311*l.*, with a glebe-house.

Opposite the town of Marazion is St. Michael's Mount, which is connected with the main land by the sands when the tide is out, but is insulated when it is high water. Across the sands is a narrow causeway of pebbles to render the communication more perfect. According to some antient traditions, the Mount was formerly attached to the shore, and surrounded with trees; but an examination of the geological features of the spot has shown that the traditions are groundless, and that the Mount could not have been separated from the land but by some great convulsion far beyond the reach of tradition or historical record.

It is supposed, and apparently with reason, that St. Michael's Mount was the Ικτις of Diodorus Siculus, the depôt for the tin refined and cast into ingots by the Britons. Previous to 1044 a priory of Benedictine monks had been established on the island; in that year Edward the Confessor gave to the monks the Mount, with all its appendages; but before 1085 Robert earl of Moreton (Mortagne?) and Cornwall, annexed it to the abbey of St. Michael in periculo Maris in Normandy. It was included in the suppression of the alien priories in the reign of Edward III., but restored as a religious house, and afterwards given, first by King Henry VI. to King's College, Cambridge, and then by King Edward IV. to the Brigitine nunnery at Sion, in Middlesex. At the Dissolution the lands belonging to this house were valued at 110*l.* 12*s.* The Mount is said to have been regarded with religious reverence as early as the fifth century. In the dark ages it was much resorted to as a place of pilgrimage. It was regarded also as a stronghold, and a castle was built on it. The Mount was seized and the monks expelled by Henry de la Pomeroy, who supported prince (afterwards king) John in his attempt to seize the throne during the captivity of his brother, Richard Cœur de Lion. It was however surrendered by Pomeroy on the approach of the royal army, supported by the sheriff with the posse comitatus: the monks were restored, and a small garrison placed in the castle. In the War of the Roses, the castle was seized by the earl of Oxford, a Lancasterian, after the battle of Barnet; the Yorkists besieged the place for several months, and at last took it by capitulation. Perkin Warbeck had possession of this castle for a while, and left his wife here as in a place of security. Upon the suppression of the monastery, the Mount was given to Humphrey Arundell of Lanherne: and when he placed himself at the head of the Cornish insurgents in 1549, the possession of this strong-hold was obstinately contested. In the civil war in the time of Charles I., the Mount was held for the royalists by Sir Francis Bassett, but was taken by the Parliamentarians in 1646. In Leland's time, there were houses at the foot of the Mount, with shops for fishermen; but before 1700 the place had so far decayed that there remained only one cottage, inhabited by a widow woman. In 1726-27 Sir John St. Aubyn rebuilt the pier, and since then the number of inhabitants has much increased. In 1831 there were 42 houses and 161 inhabitants; but in the pilchard season the number is generally increased. The Mount is extra-parochial.

The island, containing the Mount and a level piece of ground at its foot, is about a mile in circumference, and comprehends 70 acres of surface. The Mount is 231 feet in height from the level of the sea to the platform of the chapel tower. The ascent is steep, and is defended by two small batteries; the summitis occupied by the remains of the monastic buildings, which have been repaired and converted into a dwelling-house. Formerly the inhabitants had no other water than rain water collected in drains; but about the middle of the last century, on sinking a well, a fine spring was found, at the depth of 37 feet. Specimens of tin ore are said to be very plentiful all over the Mount, which is principally composed of granite. Human bones are frequently dug up wherever the soil was deep enough to allow of interment.

St. Mawes is in the parish of St. Just, in Roseland, in the hundred of Powder, on an arm of the Carrick Road, an inlet of the sea on which Falmouth stands: it is 260 miles from London, through Tavistock, Liskeard, and Tregony. This is a wretched little place, consisting of one street under a hill by the sea, and containing a few houses inhabited by fishermen. There was neither church nor chapel until 1812, when the marquis (now duke) of Buckingham built one. The parish church of St. Just is distant two miles. There is a castle built by Henry VIII., nearly at the same time as Pendennis castle, on the other side of the roadsted, but much inferior to it in size; it is now used as a residence for the lieutenant-governor. The market, which is on Friday, is very small. St. Mawes returned two members from 1562 up to the passing of the Reform Act, by which it was disfranchised. The parish of St. Just contained, in 1831, 337 houses and 1558 inhabitants. The living is a rectory of the net annual value of 425*l*., with a glebe house. It is in the diocese of Exeter and archdeaconry of Cornwall.

Mevagissey, in the hundred of Powder, is a small town on the coast of the channel, on Mevagissey Bay, several miles to the left of the road by St. Austell and Grampound to Truro and Falmouth, 250 miles from London. The parish, which is small, contained in 1831 340 houses, and 2169 inhabitants. In 1821 the population was 2450: the diminution is ascribed to the failure of the pilchard fishery, on which the inhabitants chiefly depended. Ships of 100 tons may ride securely in the pool or basin of Mevagissey. The market, which is held by prescription, is on Saturday.

The living is a vicarage, in the gift of the Earl of Mount Edgecumbe; net annual value 186*l*., with a glebe house. It is in the diocese of Exeter, and archdeaconry of Cornwall.

Padstow, in Pyder hundred, is at the mouth of the river Alan, or Camel, which here forms a wide æstuary; it is 244¼ miles from London, by Launceston and Camelford. The town is in a vale, adorned with gardens on each side, and the beauty of the situation is increased by the æstuary, which, when the tide is up, presents a clear expanse of water apparently land-locked by the granite cliffs which form the banks. The harbour is the best on the northern coast of Cornwall, and, though the entrance is much obstructed by sand, is capable of receiving vessels of great burden. The streets are in general narrow, and many of the buildings antiquated; but the town has been much improved within the last half century by the erection of many new houses: the general roofing is a fine blue slate. There is an excellent pier, a custom-house, several quays and shipwrights' yards, a workhouse, and a school-room over it. The church is in the perpendicular style of architecture. There were formerly several chapels in this parish: the east wall of that of St. Saviour, on a precipice overlooking the town and harbour, yet remains. The number of houses in the parish in 1831 was 325; the population at the same period was 1822. In the time of Leland the town carried on a considerable trade both with Ireland and Wales; the chief imports now are coals and iron from Wales, timber from Norway, and various goods from Bristol: corn, malt, and block tin are exported. The market is on Saturday. There is a school endowed with 5*l*. per annum from the Rev. St. John Eliot's donations, two Sunday schools, and several day schools, established by voluntary subscription and private benevolence. (Lysons' *Magna Britannia*, 1814.) There is supposed to have been at Padstow a monastery founded by St. Petrock, about A.D. 520, and destroyed by the Danes in 981. The place appears to have had antiently the name of Adelstowe or Aldestowe, and in the Cornish language Lodenek.

The living is a vicarage, of the net annual value of 202*l*., with a glebe-house. It is in the diocese of Exeter and archdeaconry of Cornwall.

Polperro, in the hundred of West, lies partly in the parish of Lansalloes and partly in that of Talland; it is on the coast between Plymouth and Fowey, 6½ miles from Fowey, and 237 from London. The situation of this little town is singularly romantic, the houses being on the side of two steep rocky hills, forming a very narrow valley; a small river which divides the two parishes runs through this valley. There is a harbour for vessels of 150 tons; an extensive hook and line fishery is carried on, by which Bath, Plymouth, and other places are supplied with fish: there is also a pilchard fishery, and some trade is carried on in coals, limestone, and grain. There was formerly a chapel dedicated to St. Peter on the brow of the more westerly of the two hills in the parish of Lansalloes; there are some remains of this, called the chapel house. The market is on Friday. The population of Polperro is not given separately in the population returns. The two parishes in which it stands contained together, in 1831, 1725 inhabitants, exclusive of the borough of West Looe, which is in Talland parish.

Lansalloes is a rectory, of the net annual value of 395*l*., with a glebe-house. Talland is a vicarage, of the net annual value of 110*l*.: both are in the diocese of Exeter and the archdeaconry of Cornwall. There are two endowed charity schools at Polperro; one for boys and one for girls.

Saltash is on the right bank of the Tamar, a little above its junction with the Lynher, and is in the parish of St. Stephens. The town is built on the ascent of a steep hill, the summit of which is crowned by the chapel of ease and the town or mayoralty hall, beneath which is an open market-place. The streets are narrow and indifferently built; the principal street is at right angles to the river: the buildings are chiefly of stone quarried in the rock on which the town stands. Saltash appears to have been of more consequence formerly than at present: it is now chiefly inhabited by fishermen. Some trade is carried on in malt. The number of houses in 1831 was 245; of inhabitants 1637. The rest of the parish, which is tolerably large, contained at the same time 280 houses and 1455 inhabitants. The market is on Saturday. Besides the chapel of ease, there are two dissenting meeting-houses, if not more, and a free school.

Saltash was made a free borough in the reign of John or Henry III. The borough sent members to parliament from the time of Edward VI.: it was disfranchised by the Reform Act. The town of Saltash, as one of the passes into Cornwall, was the object of many contests in the great civil war. It was first fortified by the parliament, but surrendered without resistance to the Royalists under Sir Ralph Hopton in 1642: in 1643 the Parliamentarians, finding it open, hastily fortified it; but the Royalists soon after took it by assault. It was subsequently twice occupied by the Parliamentarians, and as often recovered by the Royalists; but was finally abandoned by the king's troops in 1646. Saltash was antiently called Esse or Asheburgh or Asche. Trematon Castle, in the parish of St. Stephens, will be noticed hereafter.

The perpetual curacy of Saltash is worth 45*l*. per annum, with a parsonage house; the living of St. Stephens is a vicarage, of the net value of 139*l*. per annum, is in the diocese of Exeter and archdeaconry of Cornwall.

Stratton, in Stratton hundred, is in the northern extremity of the county, on a rivulet the waters of which ultimately fall into the sea at Bude Haven, in Bude Bay. It is 222½ miles from London by Exeter, Crediton, Hatherleigh, and Holsworthy. The harbour at Bude admits only small vessels. Sea sand is sent from Bude far inland for manure. The number of houses in the parish in 1831 was 305: the number of inhabitants was 1613.

Stratton, or the immediate vicinity, has been generally allowed to be the site of a Roman station, Musidunum; but its chief historical interest is derived from the battle fought near it in the civil war of Charles I. The scene of action was really in the neighbouring parish of Ponghill: the earl of Stamford, with the parliamentary army, was attacked May 6, 1643, by the Cornish royalists, who were far inferior in number, under Sir Ralph Hopton, Sir Beville Grenville, and others. The Royalists gained a complete victory, taking the camp of the enemy, with all their artillery, baggage, and provisions, and many prisoners. Sir Ralph Hopton was created Lord Hopton of Stratton, and after his death, Sir John Berkeley, who had distinguished himself in the battle, was created Lord Berkeley of Stratton.

Tregony is a borough, in the parish of Cuby, in the hundred of Powder, on the left or east bank of the river Fal, 251 miles from London, through Tavistock, Liskeard, and St. Austell. This town was formerly of some consequence, but it began to decay as Truro began to flourish. The houses are chiefly arranged in one long street on the side of a hill sloping down to the Fal, over which there is a bridge. The number of houses in 1831 was 234: the number of inhabitants was 1127 in the borough, or 1282 in the whole parish. The parish church of Cuby is in the upper part of the town. The market is on Saturday. The corporation of Tregony consists of a mayor, recorder, and seven or eight capital burgesses. The borough is said to have sent members to parliament in the time of Edward I.; but if this, which is doubtful, be admitted, it appears that the franchise was disused till the reign of Queen Elizabeth. From that time two were returned until the borough was disfranchised by the Reform Act. Tregony is considered to have been a Roman station, Cenium or Voluba. There was a castle of the Pomeroys at Tregony, of which there are now no remains.

The living of Cuby is a vicarage, united with the vicarage of Tregony, the church of which, dedicated to St. James, was in old Tregony, and was partly standing in the last century: their joint value is 311*l.*; in the gift of J. A. Gordon, Esq.; in the diocese of Exeter and archdeaconry of Cornwall.

Bossiney [Bossiney], St. German's, West Looe, and St. Michael's, are decayed boroughs. For the borough of Newport, we refer to Launceston.

St. German's is in the hundred of East, on the river Tidi, which unites with the Lynher, forming the St. German's river; 228 miles from London through Plymouth and Saltash. It is on the slope of a tolerably high hill, which rises on the north side of it. The houses (which, in 1831, amounted to 491 for the whole parish, one of the largest in the county), are arranged mostly in one street. The inhabitants of the parish (2586 in 1831) derive their chief support from agriculture and fishing. St. German's was at a remote period the seat of a bishopric, which was afterwards united with that of Crediton, and from this union arose the see of Exeter. Athelstan, king of England, had established here a college of priests, who were afterwards made canons of the order of St. Augustine; and the manor of St. German's was divided between the priory thus formed and the bishop of Exeter. At the Suppression, the revenues of the priory were valued at 243*l.* 8*s.*, Dugdale and Speed; or 227*l.* 4*s.* 8*d.* according to the Clare MS. Valor. The conventual church, now used as the parish church, was formerly much more extensive. The antient chancel fell to the ground in 1592, in consequence of the necessary repairs having been neglected: the church now consists of a nave and two aisles. The west front has two towers, both of which are supposed to have been once octagonal in the upper part, and quadrangular below: the north tower retains that form, but the south tower has been altered, and is quadrangular throughout. Between the towers is the entrance, formed by a very deep Norman arch with shafts and mouldings, and two small Norman windows above. The architecture of the south aisle is very dissimilar, and the use of the pointed arch indicates its later erection; indeed the pointed arch is found even in the west front, which has probably undergone partial alteration. In the part now employed as the chancel is a rude antient seat, generally called 'the bishop's chair,' but probably nothing more than the seat of one of the monks. There is a fine altar-piece, a pulpit curiously veneered and inlaid, and several monuments. The seat of the earl of St. German's, called Port Eliot, is in the immediate vicinity of the church, and occupies the site of the antient priory: the outside is irregular and devoid of magnificence, but many of the apartments are convenient and spacious, and decorated with paintings. The site of the abbey and other lands were, at the Dissolution, leased to John Champernowne and others, and afterwards granted in fee, in consideration of a sum of money, to Catherine, widow of John, and two other persons. Champernowne is said to have obtained his share in the monastic plunder by a trick creditable to his ingenuity rather than his fairness. Two gentlemen making suit to the king for these lands, Champernowne, then in attendance at court, kneeled behind them when they kneeled to his majesty, as though he had been a party to the petition, joined with them in returning thanks, and afterwards claimed his share, which, on an appeal to the king, was allowed him. From the Champernownes the estate passed to the Eliot family, of which the present earl of St. German's is the representative. There are two cattle fairs in the year. There is a free school, founded and endowed by Nicholas Honey, and we believe farther supported by the Eliot family. St. German's returned members to parliament in 1562, when its right to send was questioned. The right of election was nominally in all householders within the borough (which however contains only a few houses), but was virtually vested in the freemen, who amounted, according to Oldfield's *Representative History*, Lond., 1816, to seven: the borough was disfranchised by the Reform Act. The living is said, in the *Clerical Guide* (1836), to be a perpetual curacy, of the annual value of 101*l.* with a glebe house, in the gift of the dean and chapter of Windsor; in the diocese of Exeter and the archdeaconry of Totnes; but according to Messrs. Lysons (*Magna Britannia*), it is in the peculiar jurisdiction of the bishop of Exeter.

West Looe is separated from East Looe by the river Looe. It contained, in 1831, 126 houses, and 503 inhabitants. It is in the parish of Talland, which includes also a part of the market-town of Polperro. There is a narrow bridge over the Looe, uniting the two boroughs of East Looe and West Looe. There was formerly a chapel at West Looe dedicated to St. Nicholas, but it is now converted into a guildhall. The market, which was on Wednesday, has been long discontinued. This place was incorporated by Queen Elizabeth: the corporation consists of twelve burgesses, including the mayor. This borough sent members to parliament from the time of Edward VI., the election was in the corporation. West Looe was disfranchised by the Reform Act.

St. Michael's, otherwise Michell, is on the main road from Bodmin to Penzance and the Land's End, 248 miles from London: it is partly in the parish of St. Enoder, and partly in that of Newlyn, both in the hundred of Pyder. This place deserves notice only as being one of the boroughs disfranchised by the Reform Act. It returned two members from the time of Edward VI. The right of election was declared in 1700 to be in the lords of the manor capable of being portreeves (the portreeve is the returning officer), and in the inhabitants paying scot and lot. The latter, in the time of Browne Willis, were in number twenty-six; but Sir Christopher Hawkins having purchased the borough, pulled down the cottages as fast as they became empty, and so reduced the number of voters to four, exclusive of the lords of the manor. The population of St. Enoder was, in 1831, 1124; that of Newlyn, 1218.

The living of St. Enoder is a vicarage, in the gift of the bishop of Exeter, of the annual value of 278*l.*, with a glebe-house: that of Newlyn is a vicarage, also in the gift of the bishop, of the annual value of 380*l.*, with a glebe-house. Both are in the diocese of Exeter and the archdeaconry of Cornwall. Both churches are distant, St. Enoder three miles north-east, Newlyn two miles north-west, from St. Michell.

Divisions for ecclesiastical and legal purposes.—Cornwall was antiently a diocese by itself; and opposite opinions have been entertained as to the place where the see was first established: according to Camden, Tanner, and Gough (the editor of Camden), the see was fixed at Bodmin first, and afterwards removed to St. German's; while Mr. Whitaker, who is followed by Messrs. Lysons, contends that it was originally fixed at St. German's, and continued there until it was united with the see of Crediton. Out of this union rose the see of Exeter, in the diocese of which Cornwall is now included. The limits of the county nearly coincide with those of the archdeaconry of Cornwall; but thirty-two parishes, according to Messrs. Lysons, are exempt from the archdeacon's jurisdiction. The archdeacon's visitations are held about a month after Easter in each year at Launceston, Liskeard, Bodmin, Truro, Helston, and Penzance. The archdeaconry is subdivided into eight rural deaneries—East, Kerrier, Penwith, Powder, Pyder, Trigg Major, Trigg Minor, and West. The office of rural dean is in this county an efficient office. The deans are appointed yearly, and make regular visitations to all the churches within their deaneries, reporting the state of the churches at the archdeacon's visitation.

Messrs. Lysons give the number of parishes as 203 (two less than those given in the Population Returns), of which 85 are rectories, 100 vicarages, and 18 donatives or curacies.

Cornwall is in the western circuit. The Spring assizes are held at Launceston, the summer assizes at Bodmin. The Epiphany and Midsummer quarter-sessions are held at Lostwithiel, the Easter sessions at Truro, and the Michaelmas sessions at Bodmin. There are a county gaol and house of correction at Bodmin, and another older county gaol at Launceston, which is used at the assizes. The Cornish sessions are not attended by barristers. (Lysons' *Magna Britannia.*)

This county is however under a peculiar jurisdiction, which requires notice here,—that of the duke of Cornwall. The duchy of Cornwall was created in 1337 in favour of Edward the Black Prince, and settled by act of parliament on the eldest son of the king of England. The Duke enjoyed large revenues, arising from the lordship of castles, boroughs, and manors, granted to him in Cornwall and Devonshire; the profits arising from the coinage of tin, and various other sources. The annual revenue on the average of the three years subsequent to the death of the Black Prince was 2493*l.* 7*s.* 3¼*d.*; the clear revenue in the 15th year of Henry VIII. amounted to 10,095*l.* 11*s.* 9¼*d.*; in the 44th year of Queen Elizabeth, in 1602, it had fallen to 4569*l.* 12*s.* 2¼*d.*; and at the publication of Messrs. Lysons' *Magna Britannia* (1814), the gross amount was estimated at 22,000*l.*, of which 8500*l.* arose from the tin-duty in the county of Cornwall, and 3500*l.* from the rents of manors, fines, &c. in the same county: the sources from which the remainder was derived are not mentioned. The tin-duty before the war of 1793 had been 14,000*l.* per annum. The immediate government of the county was vested in the Duke, who has still his Chancellor, Attorney-general, and Solicitor-general, and his court of exchequer. He also appoints the sheriffs. The mining trade is under the separate jurisdiction of the Stannary Courts; the Lord Warden of the Stannaries, and the Vice-warden, are at the head of this jurisdiction, with a final appeal to the duke and his council. The miners claim to be free from all jurisdiction but that of the Stannary Courts, except in cases affecting land, life, or limb. The Vice-Warden's Court is held once a month, and is a court of equity for all matters relating to the tin mines and trade; no writ of error lies to the courts at Westminster, but there is an appeal to the Warden, and from him to the Duke in council, or, when the duchy is vacant, to the King in council. Issues are frequently directed by the Vice-warden to be tried in the Stannary Courts, which are held at the end of every three weeks before the Steward of each of the four 'Stannaries' or mining districts: in these courts all civil actions, in which either plaintiff or defendant is a privileged tinner, are tried before the Steward and a jury: from these courts an appeal lies to the Vice-warden, and from him as in other cases. The four Stannary districts are Foy More, Blackmore, Tywarnhaile, and Penwith and Kerrier. The Stannary laws are revised, or new ones enacted, by the Duke and his council, with the consent of what is called the Stannary Parliament, consisting of twenty-four Stannators, gentlemen of property in the mining districts, chosen six for each stannary. Those for Foy More are chosen by the mayor and corporation of Lostwithiel, those for Tywarnhale by the mayor and corporation of Truro; and those for Penwith and Kerrier by the mayor and corporation of Helston. The last Stannary Parliament was held at Truro in 1752, and continued by adjournments to September, 1753. The Stannary laws have been repeatedly published. The Stannary prison was at Lostwithiel, but by the recent Act (which we shall presently mention) it is now at Bodmin. The antient records of the Stannaries were kept at Lostwithiel till they were burnt in the great civil war of Charles I., in 1644, by the parliamentary army.

An act was passed in the 6th and 7th Wm. IV., cap. 106, entitled 'An Act for the better and more expeditious Administration of Justice in the Stannaries of Cornwall, and for enlarging the Jurisdiction and improving the Practice and Proceedings in the Courts of the Stannaries.' By section 4 of this act, the equitable jurisdiction of the Vice-Warden is extended to all matters connected with the working of lead, copper, or other metal or metallic minerals within the county of Cornwall. By section 6, the Stannary Courts are consolidated, and are to be held before the Vice-Warden, who is to have the same authority that the stewards had. By section 14, the Vice-Warden is authorized to make rules and orders for the regulation of the practice and proceedings of his court; such rules as relate to the Equity side of his jurisdiction to be confirmed by the Lord Chancellor, and such as relate to the Common Law side by one of the judges of the superior courts of Common Law at Westminster. The Vice-Warden's Court (section 21) is made a Court of Record, and is held at Truro. For other details, see the Act.

Previous to the Reform Act Cornwall had the largest share in the parliamentary representation of all the English counties: up to 1821 it had sent forty-four members, viz. two for the county, and two each for twenty-one boroughs, none of them of any great importance, and some of them utterly insignificant. The county was represented in parliament at the time of the first summons of Edward I., and in the latter part of that monarch's reign it returned two knights of the shire, and representatives for the six boroughs of Launceston, Bodmin, Lostwithiel, Helston, Truro, and Liskeard: to these were added, in the reign of Edward VI., Saltash, Camelford, West Looe, Grampound, Bossiney, St. Michael's, and Newport; in the reign of Mary, Penryn and St. Ives; and in that of Elizabeth, Tregony (though it has been asserted that this borough sent members in the time of Edward I.), St. German's, St. Mawes, East Looe, Fowey, and Callington. In 1821 Grampound was disfranchised. By the Reform Act the county was formed into two divisions, each returning two members: St. Michael's, Bossiney, St. Mawes, East and West Looe, St. German's, Newport, Camelford, Tregony, Saltash, Callington, Fowey, and Lostwithiel were disfranchised; and the members for Liskeard, Launceston, St. Ives, and Helston reduced to one each; making the number of members sent by the county only fourteen. The chief place of election for the eastern division of the county is at Bodmin, and the polling stations are Bodmin, Launceston, Liskeard, Stratton, and St. Austell. The chief place of election for the western division is Truro, and the polling stations are Truro, Penzance, Helston, and Redruth. The town of Falmouth was, by the Boundary Act, included in the borough of Penryn: the boundaries of other boroughs were enlarged, but no other addition was made that requires notice here.

Natural Curiosities.—The granite rocks of Cornwall present in different places an appearance so singular, that they have been mistaken for the efforts of human art in its earliest and rudest stage. The Cheese Wring or Wring Cheese occupies the highest ridge of a hill north of Liskeard, one of the hills which gradually decline from Brown Willy and Rough Tor, the highest parts of the county. The summits of all these hills are covered with granite cairns in different states of ruin, and their sides are strewed with bowlders which have fallen from them. Cheese Wring is a cairn or heap consisting of five stones piled one on the other, of which the upper ones are so much the largest as to overhang on all sides the lower ones, which form their base. The collective height of the whole pile is about fifteen feet, according to Dr. M'Culloch, whose account (*Geological Transactions*, vol. ii. pp. 66-78) we follow; but Dr. Borlase states it at thirty-two feet. The formation of this group is ascribed by Dr. M'Culloch solely to natural causes. It is, in fact, the remain of a much larger mass, the lateral parts of which have fallen away, not being so well poised as the singular part which yet remains. The granite of Cornwall is in general split by fissures, which tend for the most part to the horizontal or perpendicular; and by these fissures it is divided into cubical or prismatic masses. Where the rock rises above the surface, the influence of the atmosphere causes a gradual decay, by which first the angles formed by the fissures with the external face of the rock become rounded, then the surfaces in contact become separated, the masses originally angular acquire a curvilinear outline; and if the centre of gravity of the whole mass be high and far removed from the perpendicular of the fulcrum, the upper parts of the mass fall down, and by the continuance of the disintegration acquire the spheroidal form which the granite bowlders often exhibit. If, however, the centre of gravity be in the perpendicular of the fulcrum, the mass retains its position, as in the case of Cheese Wring, or produces the phenomenon that will be next described.

The Logging (or, as it is sometimes written, Logan) Stones are stones which are poised on a fulcrum, and which rock, when moved by an adequate force. The most remarkable of these Logging Stones is near the Land's End, on a peninsula of granite jutting out 200 yards into the sea, the isthmus still exhibiting some remains of the antient fortification of Castle Treryn. The granite which forms this peninsula is split by perpendicular and horizontal fissures into a heap of cubical or prismatic masses. The whole mass varies in height from 50 to 80 or 100 feet; it presents on almost every side a perpendicular face to the sea, and is divided into four summits, on one of which, near the centre of the promontory, the stone in question lies. The general figure of the stone is irregular; its lower surface is not quite flat, but swells out into a slight protuberance, on which the rock is poised. It rests on a surface so inclined, that it seems as if a small alteration in its position would cause it to slide along the plane into the sea; for it is within two or three feet of the edge of the precipice. The stone is 17 feet in length, and above 32 in circumference near the middle, and is estimated to weigh nearly 66 tons. The vibration is only in one direction, and that nearly at right angles to the length. A force of a very few pounds is sufficient to bring it into a state of vibration; even the wind blowing on its western surface, which is exposed, produces this effect in a sensible degree. The vibration continues a few seconds. There is another Logging Stone at St. Just, and a third at Sithney, which has been thown down; but this near the Land's End is the largest.

On the horizontal surface of the granite the action of water has formed excavations with rounded bottoms, occasionally circular in their outline, and as regularly spheroidal as if shaped with a turning-lathe. They are of various depths, and sometimes communicate with each other. The surface of 'the rock basin quoit' at Carn-brea is honey-combed by these hollows. In the parish of Constantine are two very singular monuments. One is a huge stone resembling an inverted cup or mortar, but not hollow, so regularly formed as to present the appearance of art. It is 30 feet in girth and 11 high, according to Dr. Borlase. The other monument is a vast stone perched on the points of two rocks, so that a man may creep under it; it is 33 feet long from north to south, which is its greatest dimension; the breadth from east to west is 18½ feet, and the thickness or vertical dimension is 14½ feet; the circumference is computed to be 97 feet, and the girth about 60 feet; it is estimated to weigh at least 750 tons. The top is honey-combed by rock basins similar to the rock basin quoit at Carn-brea. There are in Cornwall and the Scilly Isles other stones similarly supported; they are commonly designated by the name 'Tol-men,' *i. e.*, hole of stone. (Borlase, *Antiquities of Cornwall.*)

The cairns on Carn-brea Hill, near Redruth, and the Roche Rocks, a little to the left of the road from Bodmin to Truro, are of granite, and owe their picturesque form to natural causes.

History and Antiquities.—Before and at the time of the Roman invasion, Cornwall was probably included in the territory of the two tribes, the Damnonii and the Carnabii. Ptolemy mentions only the former of these, whom he terms Δουμνόνιοι, Dumnonii; and they seem to have occupied the south-eastern part, comprehending all the Channel coast. The Carnabii are not, we believe, noticed by any writer except Richard of Cirencester, who considers that they gave to the county the name which it had in the Latin of the Middle Ages, Cornubia. It is, however, more probable that the district gave name to the people, and that both Carnabii and Cornubia contain the Celtic root kern or corn, signifying a horn. The second part of the modern designation of Cornwall is derived from the Saxon Wealas, a name given to the Britons, some of whom, on the Saxon invasion, retired into the western part of the island, and maintained a long struggle for their national independence. Mr. Whitaker considers that the Cimbri, a people mentioned also by Richard, extended into Cornwall; but this supposition does not appear to be well supported.

At an early period this part of the island was frequented by the Phœnicians of Gadeira (Cadiz), who came hither to procure tin, lead, and skins, but especially the first; in return for which they gave salt, earthenware, and copper goods. (Strabo, lib. iii. 175.) It was probably from these Phœnicians that the western extremity of Britain, with the Scilly Islands, obtained the name of the Cassiterides (κασσιτερίδες), 'tin-islands,' from a root which, in some of the oriental tongues, as well as in Greek, denotes tin. The Greeks appear to have had some knowledge of those parts of the island where tin was wrought, before the time of the Roman conquest. (Borlase, *Antiquities of Cornwall.*)

To this remote period we may probably refer some of the rude stone monuments which are still numerous in this part of the island. Rough blocks or obelisks standing in pairs, and supposed to be memorials of the dead, are found at Dryft, in the parish of Sancreet, between Penzance and the Land's End, and at Trewren, in Maddern parish, near Penzance. There are two stones at Bolleit in St. Buryan or Burian (also near the Land's End) which are a furlong apart, one twelve, the other fifteen feet high. On the downs between Wadebridge (near Padstow) and St. Columb are nine rude stone blocks or pillars placed in line, bearing north-east and south-west, and called the Nine Maids. The circles of stones are numerous in this county, and are generally known by the name of Dawns Men, *i. e.*, the stone dance. Boskednan circle, in the parish of Gulvall and Boscawen-ûn in St. Buryan, are formed of stones placed at some distance from each other, and, for the most part, according to the plates given by Dr. Borlase, yet erect. Boscawen-ûn has a stone in the centre fixed in the ground, and leaning so far, that unless fixed at the base, it would surely fall. Other circles are formed by stones not erect, but placed near each other, so as to form a kind of fence; such are Zenor Circle, between St. Ives and Cape Cornwall, and Kerris Roundago, near Penzance, an oval inclosure, with four stone pillars at one end, marking out a quadrangular space. All these are in the western part of the county. Near Liskeard are three circles, very near each other, formed by erect stones placed at some distance; several of the stones have been carried away, and others overthrown. Popular superstition has attached to this monument a legend that the blocks were once men transformed into stones as a punishment for engaging in the sport of hurling on the Lord's Day: hence the name given to this monument of 'The Hurlers.' A similar legend is attached to a monument in the parish of St. Buryan, where nineteen maidens are said to have been turned into stone for dancing on the Lord's Day. At Botallack, in St. Just parish, near Cape Cornwall, are several stone circles intersecting each other; and on the hill Carn-Menelez in the parish of Wendron, between Redruth and Helston, is a stone circle, having in the middle of it a natural rock of four masses piled on each other after the manner of the Cheese Wring. Other stone circles are found at Tredinek in Gulvall parish, near Penzance; at Crellas, in Sancreet parish, between Penzance and the Land's End; and in two of the Scilly Islands, St. Mary and Tresco. There are also in Cornwall several circles, which Dr. Borlase supposes to have been devoted to the purposes of an amphitheatre. They are called 'plân an guare,' 'the plain of sport or pastime.' The amphitheatre of St. Just, near Cape Cornwall, may be taken as a specimen of these circles; it consists of circular stone seats rising regularly one above another, and enclosing an area of 126 feet diameter. The seats or steps, six in number, are of stone, 14 inches wide and 1 foot deep, surmounted by a rampart 7 feet wide, and rising 1 foot above the highest seat, with a ditch outside 10 feet deep from the top of the rampart. In the other amphitheatres the seats are usually of turf, as at Piran Round, or Perran Round, between St. Columb Major and St. Agnes. If we may infer anything from the more regular construction of these circles, we should assign to them a much later date than the period of which we are now speaking.

Various other antiquities may be noticed here as having probably had a British origin, though of uncertain date. There are several barrows, or sepulchral mounds, composed some of loose stones, others of earth, and others of stones and earth mingled. Some of these, on being opened, have been found to contain sepulchral urns; others, in the Scilly Isles, have an outer ring or edge of large stones, and within a cavity formed by stone walls, with flat stones at the top, and the cavity covered with the mound of loose stones or earth. There are also several cromlechs, the top stones of which are in Cornwall called 'quoits.' The quoit of Lanyon Cromlech is 19 feet long and 47 feet in circumference; its thickness varies, being in some parts as much as 2 feet; it is raised so high that a man can sit on horseback under it. It has four upright stones, but one is too short to give it any support.

Among the smaller relics of antiquity may be mentioned the sepulchral urns dug up from some of the barrows; some hollow instruments of brass or other mixed metal, apparently the heads of weapons called celts, a similar instrument of stone; spear-heads and broken pieces of copper swords; lumps of fine copper, evidently designed for melting; and a considerable number of gold coins found in 1749 near Karn-bré or Carn-brea Hill, in the neighbourhood of Redruth: these coins, which are described as rude imitations of Greek coins, are considered by Dr. Borlase to be British. Messrs. Lysons would refer the neatly-executed sepulchral urns to the Roman period, as well as the barrows that contain them; possibly, however, they may be more antient, as well as the brass or copper weapons and instruments;

for instruments of copper and pieces of earthenware are recorded by Strabo among the Phœnician importations.

There are also in Cornwall several artificial caves or subterranean galleries, formed by walls of upright stones, with other stones laid across; some of the galleries extend 30, or even 60 feet in length. The upright stones, or obelisks, with inscriptions in the Roman character, and in the Latin tongue, must be referred to a period subsequent to the Roman invasion; and from their inscriptions or symbols, several must have been posterior to the introduction of the Christian religion. Other miscellaneous antiquities of British origin we must pass over.

The period at which Cornwall fell under the power of the Romans is not known. Dr. Borlase ascribes the conquest to Agricola; Dr. Stillingfleet to Vespasian. As however none of the Roman historians who have recorded the affairs of Britain noticed the conquest of Cornwall, or of the tribes inhabiting it, it is probable that it was not signalized by any great exploits. Some of the older antiquaries denied that Cornwall ever came under the Roman dominion; but, apart from the improbability of the rich mines of this county escaping the notice, or being defended from the power of that people, the quantity of Roman coins and other Roman remains found in Cornwall, shows that Cornwall shared in the general subjection of South Britain.

The geography of Cornwall during the Roman period is very obscure. Ptolemy notices the headlands of Antivestæum, or Bolerium (Αντιουέσταιον, or Βολέριον), supposed to be the Land's End; and Ocrinum, or Damnonium (Ὄκρινον, or Δαμνόνιον), supposed to be the Lizard: and Richard of Cirencester adds the Κριῶν μέτωπον, or Rame Head. Ptolemy mentions the æstuaries of the river Tamarus (Τάμαρος) which the name enables us to identify with the Tamer, and the Cenion (Κενίων), probably the Fal, which has the most remarkable æstuary west of the Tamar. Of the towns of the Damnonii, mentioned by Ptolemy, Voluba, or Voliba (Οὐολίβα), has been fixed at Tregony, or Grampound, or perhaps at Wolvedon, where is a camp, probably Roman, on the Fal, (the name of which has been supposed to be incorporated in the word Vol-uba), and at Lostwithiel, or elsewhere on the Fowey. Uxela (Οὔξελα), which some have fixed at Lostwithiel, is more generally regarded now as having been in Somersetshire. Tamare (Ταμαρή) fixed by Horsley at Saltash, is by others removed into Devonshire, to Tamerton. To these towns, all mentioned by Ptolemy, we may add on the authority of Richard, Cenia, whose name seems to connect it with the Fal; the Κενίων of Ptolemy, but which is nevertheless fixed by some at Condurra, on the river Hel, or Helford, where are the remains of a Roman camp; Musidum, or Musidunum, which is fixed near Stratton; and Halangium, supposed to be Karnbré. Two if not three Roman roads enter Cornwall from Devonshire. One was the continuation of the great road which ran westward from Isca Dumniorum, or Exeter, and it is said may be traced on the downs west of Liskeard; it is conjectured to have proceeded westward by Lostwithiel, St. Austell, and Grampound (or Tregony), to Bossens (where is a Roman camp), near the river Heyl, which falls into St. Ives' Bay, and from thence to Marazion, or rather to St. Michael's Mount, the presumed Ictis (Ἴκτις) of Diodorus. The other road came from the north of Devon to Stratton, and is conjectured to have led towards Bude Haven, which was probably then a large and more important harbour. The existence of a third Roman road is doubtful. A road, probably British, the direction of which is marked by the occurrence of barrows, runs from the Land's End, near Redruth, Michel or St. Michael's, and St. Columb, towards Stratton. Besides the places above mentioned, Launceston has been supposed to be a Roman station. Cornwall was included in Britannia Prima.

Upon the departure of the Romans, Cornwall recovered its independence, which it maintained for a long time against the invading Saxons. The famous Arthur, whose history has been so distorted by fable as to cast a doubt over his existence, is generally reputed to have been a native of this county.

The continued and resistless pressure of the Saxons having driven westward those Britons who refused to bear the yoke of the invaders, Cornwall and Devonshire became the place of refuge to many. It was probably about this time that part of the superabundant population thus compressed into the extremity of the island, took refuge in Bretagne, already colonized by their countrymen [BRETAGNE], and gave to a district there the name of the country which they had left. [CORNOUAILLES.] The Cornish Britons and those of Wales appeared to have recognised one supreme authority until about the middle of the seventh century, when Cadwaladyr, the last British sovereign, abdicated his throne, and went to Rome, where he died. Upon his death, A. D. 680, Ivor, son of Alain, king of Bretagne, was sent by his father with a powerful fleet to obtain the crown, and met at first with considerable success, defeating the West Saxons, and obtaining possession of Cornwall, Devonshire, and Somersetshire: he was however afterwards driven from the island by the West Saxon king Kentwin. In A. D. 710, Ina, king of Wessex, defeated the Cornish Britons, under their king Geraint. Œthelheard, successor of Ina, renewing hostilities, was defeated by Rodri Maelwynawc at Heilyn. In A. D. 743, Cuthred, king of Wessex, defeated the Britons, but from his having the assistance of the Mercians, we consider it likely that it was the Britons of Wales, not Cornwall (as Messrs. Lysons suppose), who were attacked by him. The Cornish Britons had however to sustain the hostility of Cynewulf, one of his successors.

In A. D. 800, Egbert ascended the throne of Wessex, and his first hostilities were directed against Devonshire and Cornwall: the Britons were defeated in 813, and he ravaged the country unchecked. In 823 a great but indecisive battle was fought at Gafulford (supposed to be Camelford), between the Cornish Britons and the Saxons, who had by this time acquired the partial if not the total possession of Devonshire. Twelve years afterwards, in 835, the Cornish men, assisted by the Danes, who were beginning to assail England, were defeated on Hengston-hill (Hingston Down), near Callington, by Egbert, who had now established the permanent supremacy of Wessex, and deprived the Britons of the relief which they had hitherto experienced from the dissensions of the Anglo-Saxon princes. Irritated by the aid which they had given the Danes, Egbert prohibited the Britons from setting foot within the Saxon territories on pain of death. During the reign of the successors of Egbert, we hear little of Cornwall until we come to the time of Athelstan, by whom the whole country, including the Scilly Isles, was reduced and incorporated with the now consolidated kingdom of England. From this time the provincial history of Cornwall offers little to interest the reader for many centuries. Some ravages of the Danes, and some intestine commotions, are the only memorable events. The attempt of Henry de la Pomeroy to seize St. Michael's Mount, in order to support the rebellion of Prince John against his brother, Richard I., has been already noticed.

Of the obscure and troubled period over which our historical notice extends, Cornwall retains many memorials in the camps and earth-works, which are more numerous in this country than in any other. These are, for the most part, nearly round or oval, a form which induces us to refer them to any other than a Roman origin. They possibly were formed during the severe and protracted struggles of the Cornish Britons with the Anglo-Saxons. In many places of the coast, a small promontory, or portion of the cliff, is enclosed by a rampart, or vallum, running from one edge of the cliff to the other, and strengthened on the land side by a ditch. These, if situation be any clue to their origin, may be ascribed to the Danes. The space enclosed is considerable; in one case (in the parish of St. Gorran, near Mevagissey,) it amounts to 100 acres. Our space forbids a description of these works, and a mere catalogue would be useless.

The ruins of castles and of monastic establishments belong to a later period than the earth-works; but in these Cornwall is not remarkably rich. On the hills are the remains of rude circular buildings, called castles, the walls of which were formed of dry stones, not joined with any cement: these must be referred to an early period; Dr. Borlase considers them to be of Danish origin. In the narrow part of the county west of Mount's Bay and St. Ives' Bay, there are no less than seven of these castles, of which the most remarkable are Caer Bran in Sancreet parish, Castle an Dinas in Ludgvan parish, and Chûn Castle in Morvah. Chûn Castle consists of an oval enclosure surrounded by a wall, which Borlase estimates to have been originally 15 feet high, or rather more; 8 feet thick at the present top, but thicker at the foundation: outside of this is a ditch 30 feet wide; and outside of this, an outer wall, probably 10 feet high, and about 5 feet thick. The entrance, made intricate for the purpose of defence, is enclosed by walls running from the outer wall, on one side of the entrance quite to the inner wall, and on the other to within three feet of it: two other walls running from the outer to the inner wall serve, with the entrance, to divide the ditch into three parts. Round the outer wall is a ditch, the width of which is not given. The space enclosed by the inner wall is 125 feet from east to west, and 110 from north to south; it is divided into several compartments ranged round the inside of the wall: there is a well in the enclosure.

Of castles intended for residence as well as defence, may be mentioned Karn-brê, or Carn-brea Castle, on Carn-brea hill, near the Land's End. This is very small, scarcely 60 feet long by 10 wide, built upon a ledge of rock, whose uneven surface has caused great diversity in the level of the rooms upon the ground floor. The building had three stories in some parts, in others but one. Part of the building is very antient and of rude architecture, and the less antient part is thought to have been built on older foundations. Carn-brea hill abounds with antiquities: there is an antient camp of irregular form, some cairns, and other antiquities of rough stone. Tintagell Castle has been already noticed. [Bossiney.] For Launceston Castle, see Launceston.

Trematon Castle is on an eminence over the river Lynher, in the parish of St. Stephens, and not far from Saltash. It has a base court surrounded by an embattled wall of irregular form, following the shape of the hill on which it stands, and pierced with loop-holes. The keep is on an artificial mound, at the north-east corner of the base-court, about 30 feet high: the walls of the keep are 30 feet high, and 10 thick: it is nearly oval, and its inner dimensions are 66 feet by 52. It has no windows in the outer wall. In the time of William Rufus this castle was held by the Valletort family. In the Cornish rebellion in 1549 (reign of Edward VI.), Trematon Castle was defended for a while against the rebels by Sir Richard Grenville.

Of Restormel Castle, in the parish of Lanlivery, near Lostwithiel, the only part now remaining is the keep, a building of large dimensions: it is on a steep mound, formed out of a rocky hill, and has a deep ditch. The enclosure of the keep is an exact circle of 110 feet diameter within; it has walls 10 feet thick at the top: from the present floor of the ground-rooms to the top of the parapet, is 34½ feet. Restormel Castle was a seat of the family of the Cardinans; it afterwards came into the possession of the earls of Cornwall: it is still attached to the duchy.

The castles of Fowey and St. Mawes have been noticed above. For Pendennis Castle, see Falmouth.

There are few remains of monastic buildings in Cornwall. The church of St. German's priory has been already described: the monastic remains on St. Michael's Mount have been also noticed. Of the monastery of St. Benet, near Lanivet, there are considerable remains, now occupied as a dwelling-house. The tower of the church is also standing. There is no certain account of this religious house, which is said to have been a Benedictine nunnery, subordinate to some foreign monastery. The chapel of St. Lawrence's Hospital, near Bodmin, remains. Morwinstow Church, in the northern extremity of the county, and Kilhampton or Kilkhampton Church, near Stration, are very antient, being wholly or chiefly of Norman architecture. Sheviock Church, near St. German's, has some portions of early English, and other portions of decorated English architecture.

In the war of the Roses, the Cornish men seem to have taken the Lancasterian side, induced mainly by the influence of Sir Hugh Courtenay of Boconnoc, and Sir John Arundell of Lanherne: they were present in the field at Tewkesbury; and it was in their country (at St. Michael's Mount) that the Earl of Oxford, one of the Lancasterian leaders, sought to make a stand after that fatal day. In the reign of Henry VII. (1495), they rose in rebellion on occasion of a tax levied to defray the expense of a war with Scotland. Thomas Flammock or Flamank, a man of respectable family, and a lawyer; Michael Joseph, a smith of Bodmin, and Lord Audley, were the leaders of this revolt: the common men were armed with bows and bills. The insurgents advanced towards the metropolis, but were entirely defeated on Blackheath, and their leaders executed. In 1497 the Cornish men were again in arms to support Perkin Warbeck, but the flight of that pretender caused the failure of the attempt. In the reign of Edward VI., in 1549, a new revolt broke out, connected with the religious revolution of that period. The Cornish men took up arms to sustain the antient (Catholic) church, and besieged Exeter; but were forced to raise the siege, and at last, though not without difficulty, were subdued. The change of the religious institutions of the county led to the change of the common language of Cornwall; the people, for the most part of British descent, with comparatively few Saxons settled among them, had retained a language of their own, a dialect of the Celtic. The introduction of the English church service paved the way for its gradual decline. When Carew published his survey of Cornwall in 1602, it was going fast into disuse: 'the English speech,' says he, 'doth still encroach upon it, and hath driven the same into the uttermost skirts of the shire. Most of the inhabitants can speak no word of Cornish, but very few are ignorant of the English, and yet some so affect their own, as to a stranger they will not speak it; for if, meeting them by chance, you inquire the way or any such matter, your answer shall be "*Mee a navidra couza Sawzneck*," "I can speak no Saxonage."' In the reign of Charles I., some aged people near Penryn were quite ignorant of the English language. In the early part of the last century, the Cornish was still spoken by the fishermen and market women, near the extreme southern point of the county. At present this antient tongue is the study of the scholar and antiquary alone. A few MSS. in it are extant; the most remarkable of which are some interludes, partly written in the fifteenth century.

In 1595 Penzance and one or two places near it were burnt by the Spaniards.

In the great civil war of Charles I. and his parliament, the Cornish men seem to have been on the whole in favour of the king. At the beginning of the contest indeed, the Parliamentarians, under the leadership of Sir Alexander Carew of Anthony, and Sir Richard Buller of Morval, secured the eastern part of the county, and garrisoned Launceston and Saltash. Sir Nicholas Slanning, a zealous Royalist, held Pendennis Castle for the king; and the Royalists rising under the command of Sir Ralph Hopton and others, drove the parliament forces from Launceston and Saltash, and obtained entire possession of the county: these events were in 1642. In the winter of that year, the parliamentary forces under Ruthen, governor of Plymouth, attempted to regain it, but were defeated on 19th January, 1643, on Broad Oak or Bradock Down, near Liskeard. Saltash, which Ruthen had hastily fortified, was taken by storm, Ruthen escaping to Plymouth; and on May 15th, the Parliamentarians, under the Earl of Stamford, were entirely defeated at Stratton. The Cornish men afterwards distinguished themselves on the Royalist side at the battle of Lansdowne and the siege of Bristol in the same year: and the king in reward of their loyalty wrote them a letter of thanks, which he ordered to be printed and published, and a copy to be read in every church and chapel in the county. In July, 1644, the Earl of Essex marched into Cornwall at the head of the parliamentary forces, and took possession of Launceston, Saltash, Bodmin, Lostwithiel, and Fowey; but being followed by the royal army, under the king in person, was forced to retreat to Fowey with his infantry, his cavalry having previously got clear off. From Fowey Lord Essex escaped with some other persons to Plymouth; but his infantry, 6000 in number, under Major-General Skippon, were forced to capitulate 2nd September. In October, Saltash, which the Royalists had recovered, was seized by a detachment of the parliamentary garrison at Plymouth, but retaken by storm by Sir Richard Grenville. In the autumn and winter of 1645, Charles II., then Prince of Wales, spent some time in Cornwall: in March, 1646, he embarked at Pendennis Castle for the Scilly Isles, upon the approach of the Parliamentarians under Fairfax, who, after defeating Lord Hopton at Torrington, entered Cornwall, forced the Royalist cavalry to surrender, and acquired possession of the whole county. The Royalist army had been disorganized by the disputes of their leaders. Pendennis Castle, one of the last places in England which held out for the king, surrendered in August, 1646. The Scilly Islands had some time before been seized by the victorious party, and Prince Charles forced to flee, first to Jersey, and afterwards to France. In 1648 an attempt to raise forces to restore the king's cause was defeated by Sir Hardress Waller. In 1650 the Scilly Islands were held for the king by a body of English and Irish forces; but the islands were all taken in 1651 by the fleet under Sir George Ayscough.

The Dutch made two attempts on the Cornish coast in the war between them and the Commonwealth, but were defeated in both. Since this period the local history of Cornwall affords little interest.

Statistics.—*Population.* Cornwall may be considered as an agricultural as well as a mining county. It ranks the twenty-seventh on the list of agricultural counties, and has remained stationary in this respect since 1811. Of 67,737 males twenty years of age and upwards inhabitants of the county (in 1831), 24,464 were engaged in agricultural pursuits (of these 16,243 were labourers), and only 107 in manufactures, or in making manufacturing machinery. Of this latter number 50 were employed in the Iron iron foundery and rolling-mill at St. Erth, 17 in powder-mills at St. Gluvias and Stithians, 5 in a manufactory of tin at Gulvol, and the remainder in weaving, &c. at various places. The number of labourers of twenty years of age and upwards employed in labour, not agricultural, was 22,706.

The following table contains a summary of the number of inhabitants, in 1831, showing their occupations in each hundred, &c. in the county.

HUNDREDS, &c.	HOUSES.				OCCUPATIONS.			PERSONS.			Males twenty years of age.
	Inhabited.	Families.	Building.	Uninhabited.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	All other families not comprised in the two preceding classes.	Males.	Females.	Total of persons.	
East	5,548	6,529	32	271	3,117	1,796	1,616	15,630	16,133	31,763	7,660
Kerrier	9,178	10,244	136	400	2,478	2,056	5,710	24,361	26,952	51,313	11,566
Lesnewth . . .	1,568	1,685	7	65	938	346	401	4,179	4,098	8,277	2,079
Pennrith . . .	13,082	14,156	274	662	2,470	2,860	8,826	35,060	37,342	72,402	16,316
Powder . . .	11,110	12,255	148	611	3,125	3,075	6,055	30,019	31,892	61,911	14,475
Pyder	4,539	4,828	54	155	1,934	834	2,060	12,883	12,806	25,689	6,073
Stratton . . .	1,545	1,744	32	49	1,086	390	268	4,517	4,298	8,815	2,229
Trigg	2,371	2,586	26	127	1,173	703	710	6,441	6,616	13,057	3,194
West	3,083	3,525	29	162	1,904	740	881	9,083	9,171	18,254	4,233
Launceston (borough and town) . .	324	496	5	15	22	267	207	1,030	1,201	2,231	533
Falmouth (town) .	652	1,203	7	10	..	228	975	1,858	2,903	4,761	774
Scilly Islands . .	521	565	8	11	104	87	374	1,152	1,313	2,465	605
Totals . . .	53,521	59,816	758	2538	18,351	13,382	28,083	146,213	154,725	300,938	69,737

The population of Cornwall at each time the census was taken since the commencement of the present century was—

	Males.	Females.	Total.	Inc. per Cent.
1801 .	89,868 .	98,401 .	188,269 .	..
1811 .	103,310 .	113,357 .	216,667 .	15
1821 .	124,817 ..	132,630 .	257,447 .	19
1831 .	146,213 .	154,725 .	300,988 .	17

Showing an increase of 112,719 between the first and last periods; which is an increase of rather more than 59¾ per cent., or 2¾ beyond the general rate of increase throughout England.

County Expenses, Crime, &c.—The sums expended for the relief of the poor at the four dates, when the census was taken, were—

In 1801 .	£ 54,648	which was at the rate of	5*s.* 9*d.*
„ 1811 .	103,736	,, ,,	9*s.* 7*d.*
„ 1821 .	104,178	,, ,,	8*s.* 1*d.*
„ 1831 .	102,151	,, ,,	6*s.* 9*d.*

for each inhabitant.

The sum expended for the same purpose in the year ending 25th March, 1836, was 74,856*l.* 3*s.*; assuming that the population has increased at the same rate per-centage as in the ten years preceding that period, the above sum gives an average of 4*s.* 7*d.* for each inhabitant. All these averages are below those for the whole of England and Wales.

The sum raised in Cornwall for poor-rate, county-rate, and other local purposes, ending 25th March, 1833, was levied upon the various descriptions of property, as follows:—

	£.	s.	d.
On land . . .	91,906	5	0
,, dwelling-houses . .	18,995	0	0
,, mills, factories, &c. . .	2,582	4	0
,, manorial profits, navigation, &c.	7,951	19	0
Total money levied by assessment .	121,435	8	0
The amount expended was:—			
For the relief of the poor .	100,318	18	0
In suits of law, removal of paupers, &c.	4,453	4	0
For other purposes . .	15,163	8	0
Total money expended .	£ 119,935	10	0

In the returns made up for the three succeeding years, the descriptions of property assessed for local purposes are not distinguished.

	1834.	1835.	1836.
The total money levied, was	£ 119,822 9 0	111,170 14 0	98,846 10 0
Expended for relief of poor .	93,036 11 0	81,534 15 0	74,856 3 0
,, in suits of law, removal, &c. . . .	4,182 6 0	3,430 13 0	3,233 1 0
Payments for or towards county rates . . .	.. ..	8,459 17 0	7,390 8 0
Expended for all other purposes	19,012 11 0	11,913 15 0	11,644 2 0
Total parochial rates expended	116,231 8 0	109,352 0 0	97,053 14 0

The difference of the sums expended for the relief of the poor in the respective years 1835 and 1836 is therefore 9678*l.* 12*s.*, which is rather less than 11¼ per cent.; the difference of the total of parochial rates expended is 11,298*l.* 6*s.*, making the whole amount of saving rather more than 10¾ per cent.

The number of turnpike trusts in Cornwall, as ascertained in 1834, was 13; the number of miles of road under their charge was 318; the annual income arising from the tolls and parish composition was 24,044*l.* 15*s.* 8*d.*; and the annual expenditure, 23,895*l.* 5*s.* 10*d.*

The amount of expenditure of county-rate, in the year 1834, was 8,024*l.* 9*s.* 7*d.*, disbursed as follows:—

	£.	s.	d.
Bridges, building, repairs, &c. .	555	7	3½
Gaols, houses of correction, &c., and maintaining prisoners, &c. .	2,637	0	9½
Lunatic asylums . . .	200	19	11
Prosecutions . . .	1,417	14	4
Clerk of the peace . . .	344	17	11
Conveyance of prisoners before trial .	548	3	2
,, of transports . .	97	17	6
Coroner	238	13	0
Debt—Payment of principal and interest	1,176	6	6
Miscellaneous . . .	807	9	2

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were respectively 646, 679, and 1144; making an average of 92 annually in the first period; of 97 in the second, and of 163 in the third.

The number of persons tried at quarter-sessions in respect of which any costs were paid out of the county rates in each of the years 1831, 1832, and 1833, were 161, 174, and 168, respectively:

	1831.	1832.	1833.
Total number of felonies so tried	93	130	118
„ misdemeanors	68	44	60

The total number of commitments to the quarter-sessions in each of the same years was 142, 145, and 146, respectively: of whom

	1831.	1832.	1833.
The number convicted was .	94	109	101
„ acquitted . .	18	19	14
Discharged by proclamation .	30	17	31

At the assizes and sessions (in 1835) 206 persons were charged with criminal offences in Cornwall; out of which number 22 were charged with offences against the person, 11 of which were common assaults; 3 persons were committed for housebreaking; 145 for offences against property committed without violence; of the remaining 36 one was committed for killing and maiming cattle, 3 for forging and coining, 9 for assembling armed, &c., to aid smugglers, and 23 for riot, &c. Of the whole committed 144 were convicted and 62 acquitted, or no bills found. Among those punished 1 was executed; 29 sentenced to transportation for various periods; 18 imprisoned for terms between 2 years and 6 months, and 73 for 6 months and under; 2 were whipped, 15 fined, 4 discharged on sureties and 2 pardoned. Of the offenders 175 were males and 31 females. Among the whole number 106 could read and write, 55 could read only, 40 could neither read nor write, and the degree of instruction could not be ascertained of the remaining 5. The proportion of the offenders to the population, in 1835, was 1 in 1461.

The number of persons qualified to vote for the county members of Cornwall were, in

	1834.	1835.
The eastern division . .	4392	4446
western „	3612	3504
	8004	7950

which is 1 in 32 of the whole population, and 1 in 6 of the male population above 20 years of age. The expenses of the last election to the inhabitants of the county were 385*l.* 4*s.* 8*d.*, and were paid out of the general county rate.

There are eight savings-banks in this county. The number of depositors and amount of deposits on the 20th November were as follows:—

	1832.	1833.	1834.	1835.
Number of depositors	6245	6737	7181	7734
Amount of deposits	£252,776	269,885	85,075	306,676

The various sums placed in the savings-banks in 1834 and 1835 were distributed as under:—

		1834.		1835.	
		Depositors.	Deposits.	Depositors.	Deposits.
Not exceeding	£20	2915	£24,923	3019	£25,623
„	50	2428	74,681	2649	80,462
„	100	1119	77,425	1290	84,396
„	150	410	48,852	429	51,065
„	200	227	38,625	259	43,780
Above	200	82	20,569	88	21,350

Education.—The following particulars are taken from the parliamentary papers on education arising out of the inquiry on that subject made in the session of 1835:—

	Schools.	Scholars.	Total.
Infant Schools	116		
Number of infants at such schools; ages from 2 to 7 years:—			
Males		862	
Females . . .		1023	
Sex not specified		756	
			2641
Daily Schools	973		
Number of children at such schools, ages from 4 to 14 years:—			
Males . . .		13,021	
Females . .		10,396	
Sex not specified		5571	
			28,988
Schools	1089		
Total of children under daily instruction .			31,629
Sunday Schools	367		
Number of children at such schools, ages from 4 to 15 years:—			
Males . . .		14,674	
Females . .		13,393	
Sex not specified		6234	
			34,301

Maintenance of Schools.

Description of Schools.	By endowment.		By subscription.		By payments from scholars		Subscrip. and payment from scholars	
	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.
Infant Schools	—	—	7	262	105	2007	4	382
Daily Schools	51	1544	52	2,206	795	21,024	75	4214
Sunday Schools	—	—	349	33,220	6	310	12	771
Total.	51	1544	408	35,678	906	23,341	91	5367

Assuming that the population between 2 and 15 years, increased in the same ratio as the whole of the population between 1821 and 1831, and has continued to increase in the same ratio since, we find that there must have been living in Cornwall in 1834 (the time this education inquiry was made) 100,756 persons between those ages. A very large number of the persons receiving instruction attend both daily and Sunday schools. Only six schools are returned from places where no other school exists, and the few children (207 in number) who are instructed therein, cannot be supposed to attend any other school; at all other places Sunday-school children have opportunity of resorting to other schools also; but in what number or in what proportion duplicate entry of the same children is thus produced cannot be ascertained. Twenty-six schools, containing 1381 children, which are both daily and Sunday-schools, are returned from various places, and duplicate entry is therefore known to have been thus far created; we may therefore conclude that scarcely more than half, or, at most, two-thirds of the children receive instruction.

The schools established by Dissenters, included in the above statement, are:—

	Schools.	Scholars.
Infant Schools	2	29
Daily „	7	220
Sunday „	173	18,738
Schools established since 1818 are:—		
Infant and other daily schools	483	18,128
Sunday Schools	244	23,775

Fourteen boarding schools are included in the number of daily schools as given above.

No school in this county appears to be confined to the children of the Established Church, or any other religious denomination; such exclusion is disclaimed in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists and one school for Jewish children. Lending-libraries of books are attached to 35 schools in this county.

CORNWALLIS. Charles, second Earl and first Marquis of Cornwallis, was born December 31, 1738, and educated at Eton, and St. John's, Cambridge. In 1761, during the Seven Years' War, he served abroad under the title of Lord Broome, as aide-de-camp to the marquis of Granby. In 1762 he succeeded to the peerage on the death of his father, in 1766 he was made colonel of the 33rd regiment of foot, and in 1770 governor of the Tower. He was also aide-de-camp to the king, who held him in high favour; and it is recorded to his honour, that though a general supporter of the administration, he exercised an independent judgment, and voted against ministers on several important questions. More especially, he was opposed to the steps which led to the American war; but when his regiment was ordered abroad, in 1776, he declined to profit by the special leave of absence obtained from the king, and sailed with it, leaving a devotedly attached wife, who is said to have lost her life in consequence of her grief and anxiety at the separation.

He served actively and with distinction, with the rank of major-general, under generals Howe and Clinton, in the campaigns of 1776-77-78-79 in New York and the southern states, and in 1780 was left in the command of South Carolina with 1000 men. He gained a victory over General Gates at Camden, August 16, 1780, and a second, less decisive, over General Greene at Guilford, March 15, 1781—both against superior numbers. But the population of the country being unfriendly to the royal cause, these advantages were transient. In the course of the spring of 1781 Cornwallis invaded Virginia, where he obtained no decided success, but caused an immense amount of damage to private property. On receiving orders from Sir H. Clinton, then at New York, to embark part of his forces for New York, he moved to Portsmouth in Virginia; but here he received fresh instructions, under which he was ordered to Williamsburg, the colonial capital of Virginia, and directed to make Point Comfort his place of arms. But Point Comfort being found ill suited for this purpose, Cornwallis moved to York Town on York River, where he entrenched himself in the strongest way he could. He was there besieged by the French and American forces, assisted by the French fleet under De Grasse, and reduced to surrender himself and his troops prisoners of war, after an obstinate defence, October 19, 1781. More fortunate than Burgoyne, he escaped, owing perhaps to his favour with the king, such undeserved persecution as that general experienced. His capture however was a death-blow to the British cause, and principally led to that change of ministers and measures which resulted in the peace of 1782.

In 1786 lord Cornwallis was appointed governor-general and commander-in-chief of Bengal. His temper being mild and equitable, and his application to business constant and effective, he was honourably distinguished by a sincere desire to promote the welfare of our oppressed Indian subjects, and introduced a variety of internal changes, which were characterized by a great unfitness for the purpose they were intended to serve. His administration is chiefly remarkable for the war undertaken against Tippoo Saib [Tippoo]. The disasters experienced at first by the English caused the governor to take the field himself, in 1791; and by a change in the quarter of attack, he succeeded in penetrating to the heart of Tippoo's dominions, and captured Bangalore, in March. In the following February siege was laid to Seringapatam, and the capture of that city was averted only by a treaty, which stripped the sultan of one half of his dominions. In August, 1793, lord Cornwallis returned to England, where he was received with distinguished honours, raised to the rank of marquis, and appointed master-general of the ordnance. In 1798 (the æra of the rebellion) he was made lord-lieutenant of Ireland. In the distracted state of that country, a man of generous and conciliatory temper was even more needed than one of military skill. He put down the rebellion: but he also checked the disgraceful outrages practised by the supporters of government, restored tranquillity, and acquired the good-will of the Irish. In 1801 he was succeeded by lord Hardwicke; and in the same year, being appointed plenipotentiary to France, he negotiated the peace of Amiens. He was re-appointed governor-general of India in 1805, and arrived at Calcutta in August, in bad health. Proceeding immediately to assume the command of the army in the upper provinces, he was seized with illness, and died at Ghazapore, in the province of Benares, October 5, 1805. His character as a soldier and statesman was highly respectable; but he was more distinguished by diligence, humanity, and integrity, than by the higher mental qualities.

COROLLA, the name given by botanists to the innermost of the envelopes by which the organs of multiplication of many flowers are covered. Like the calyx [Calyx] it is composed of leaves changed from the ordinary state of those parts in consequence of an alteration in the office they have to perform, but liable to resume the state of common leaves if exposed to the effect of any disturbing cause. The corolla is usually thin, delicate, perishable, and both larger and more richly coloured than the calyx; hence the older botanists considered those qualities proper to the corolla, and applied the term to all cases in which they existed. But it is now known that the calyx is frequently in the same state, and hence the only distinction that is now made between calyx and corolla is to consider everything calyx which forms the exterior of two or more rows of floral envelopes, everything corolla that belongs to the inner rows, and when there is only one row, to refer that to the calyx, whatever the colour or texture of it may be.

There is little doubt that when a calyx is green and leafy, its business is principally to protect the corolla; and that a corolla, when large, thin, and brightly coloured, is intended to exercise some special influence upon the fertilizing organs of the flower; for while the respiratory action of the calyx when green is not distinguishable from that of common leaves, the corolla differs most essentially in the want of all power of decomposing carbonic acid; it absorbs oxygen from the air, but does not part with it again in a pure state; on the contrary, it combines it with its carbon, and throws off the carbonic acid thus formed. But although there is this difference between the calyx and corolla in ordinary cases, the functions of the corolla are performed by the calyx when it has the appearance of a corolla, and *vice versâ*. The peculiar functions of these parts are therefore performed indifferently by the one or the other according to their structure.

The leaves of which a corolla is composed are called petals; and the endless varieties of its form and structure depend principally upon the different manner in which those parts are united, or upon the proportions they bear to each other. A monopetalous corolla for instance, is composed of several petals joined more or less together by their edges; campanulate corollas originate from petals without a claw or unguis; tubular corollas from unguiculate petals. In a regular monopetalous corolla all the petals are of equal size, and are united in the same degree; in an irregular monopetalous corolla, the petals are unequal in size, and perhaps unequally united.

The corolla is generally the part of the flower in which grotesque forms are most frequently met with; such as horns or spurs projecting from the base; or a cowled figure, or dark hairy appearances resembling the bodies of insects, as in the bee larkspur, various orchidaceous plants, &c. The cause of these singular forms is entirely unknown; they appear to be specific cases, of which no explanation can be given.

For the theory of the structure of the corolla, the modification of its form, and other particulars, see De Candolle's *Organographie Végétale*, Mirbel's *Elémens*, Lindley's *Introduction to Botany*, and generally all elementary books of the higher kind written within the last five or six years.

COROLLARY (Corolla, 'a little crown') is frequently used for any necessary consequence of a proposition; but technically applied in geometry, it means a consequence which immediately follows from the demonstration of a proposition, without the necessity of introducing any other proposition. But all the corollaries in our editions of Euclid are annexed by editors, none of them being in the original. Those of book i., prop. 32, were added by Campanus; but the first use of the word which we know of is in the English translation of Billingsley. [Dee, John.]

A corollary of any proposition (which call A), should, in consistency with the majority of writers, mean a proposition which cannot be false, unless some part of the demonstration of A, or some notion which the existence of A implies, be false. In this sense all the propositions of the fifth book of Euclid are corollaries of the definition of proportion.

COROMANDEL COAST—originally Cholomandala, or according to Major Rennell, the Sora Mandalum of Ptolemy—is the sea board of the western side of the bay of Bengal, extending from Point Calimere on the south, in 10° 18′ N. lat. and 79° 56′ E. long., to the mouth of the river Krishna on the north, in 15° 45′ N. lat. and 80° 53′ E. long. Through its whole extent, about 350 miles, this coast does not afford any secure port or harbour; and owing to the prevalence of the surf, it is difficult to effect a landing except by means of boats peculiarly constructed for the purpose. [Cuddalore—Madras—Pondicherry.]

CORON, a town in the Morea, on the west coast of the gulf of Kalamata, the antient Messenian gulf. It appears to stand at or near the site of the antient Colonides, while the town of Corone, of which Pausanias speaks as having been built by the Messenians when they were restored to their country, by the help of the Thebans, would seem, by the description which that author gives of its locality, to have stood farther north on the same coast, near the spot where the village of Petalidhi now stands. The present Coron is a place of some trade, and exports oil and silk which are produced in the neighbouring district.

The town consists of a large castle in tolerably good repair, in which the Turkish inhabitants used to reside before the Greek revolution, the Greek population then occupying the suburb called Varusi. The roadstead is open and exposed to the south winds, but the bottom of the shore being soft sand, vessels driven upon it often escape without much damage. The town stands on a promontory surrounded by a fertile plain, which is divided from the district of Modon, on the west coast of the Morea, by a barren ridge which runs north and south through the peninsula to Cape Gallo, antiently Acritas. (Leake's *Morea*, vol. i.)

CORO'NA. [COLUMN.]

CORO'NA BOREA'LIS AND AUSTRA'LIS, the northern and southern crowns. The first is a northern constellation, found in Aratus, who says it was formed by Bacchus in memory of Ariadne. It is situated between Bootes and Hercules, and the bright star of its cluster (marked *a*) may be seen about an hour eastward of Arcturus, and about eight degrees nearer to the pole. Corona Australis is a southern constellation, first found in Ptolemy. It is situated between the front legs of Centaurus.

CORONA BOREALIS.			
	No. in Catalogue of		
Character.	Flamsteed.	Astron. Society.	Magnitude.
β	3	1753	4
θ	4	1765	4½
α	5	1770	2½
μ	6	1777	5
ζ	7	1782	4
γ	8	1790	4
δ	10	1805	4
κ	11	1813	5
ε	13	1825	4½
υ	18	1870	6
ξ	19	1879	5
ν^1	20	1880	5
ν^2	21	1881	5

CORONA AUSTRALIS.			
	No. in Catalogue		
Character.	Piazzi ().	Astron. Society.	Magnitude.
γ	(280)	2206	5
δ	(291)	2210	5
α	(300)	2216	5
β	(305)	2218	5

CORONATION, the act of crowning or consecrating a king. This rite is of remote antiquity, as may be gathered from the notices which we have in Scripture, in the first and second books of Kings, of the coronations of Solomon, and of Joash the son of Ahaziah, of the latter of whom it is expressly said that Jehoiada the priest took him, put the crown upon his head, and gave him the testimony, and they made him king, and anointed him. The act of anointing seems to have originated with the Jews.

In England, after the kingdoms of the Heptarchy had become united, we find the ceremony of coronation continually alluded to in the Saxon Chronicle, under the term ȝehalȝoð, by which is expressed that the king was hallowed or consecrated. Kingston-upon-Thames was the place where the Saxon sovereigns were crowned during nearly the whole of the tenth century. (See Diceto and the other historians in the *Decem Scriptores*.) Edgar, who succeeded to the throne in 959, is said to have been crowned either at Kingston or at Bath. Edward the Confessor was crowned at Winchester in 1042. The copy of the Gospels upon which the Saxon kings were sworn at their coronations is believed to be still preserved amongst the Cottonian Manuscripts in the British Museum, in the volume Tib. A. ii. Harold and William the Conqueror were crowned at Westminster. It was customary with the Norman kings to be crowned more than once. Henry II. crowned his eldest son, and associated him with himself in the administration during his own life.

In one or two instances, in the Norman times, we find the regnal years of our kings dated from their coronations only; the previous time, between the predecessor's death and the performance of the inaugural ceremony, was considered as an interregnum. This is a fact of no small importance to those who would accurately fix the dates of public instruments and transactions in the reigns of Richard I., John, and their successors.

The first English coronation of which we have any detailed account is that of Richard I., in the Histories of Diceto and Bromton. (See Twysd., *Script.* x. coll. 647, 1157.) An account of all the formalities observed at that of Richard II., taken from the 'Close Rolls,' is to be found in Rymer's 'Fœdera,' the old edition, vol. vii. p. 157. Froissart has given a short but interesting narrative of the coronation of Henry IV., which the reader may see in the English edition of his 'Chronicle,' by Lord Berners, 4to., London, 1812, vol. ii., pp. 753, 754. The details of the English coronations of Henry V. and VI., and of the latter in France, are contained in the Cottonian Manuscripts, Tib. E. viii. and Nero C. ix. Hall and Grafton have described the ceremonies at the coronation of Richard III. The account of the coronation of Henry VIII., with the king's oath prefixed, interlined and altered with his own hand, is likewise preserved in the Cottonian Manuscript already mentioned, Tib. E. viii. The oath, with its interlineations, is engraved in fac-simile in the first volume of the second series of Ellis's 'Original Letters illustrative of English History.' Fuller, in his 'Church History,' and Ellis's 'Letters,' 1st Ser., vol. iii. p. 213, detail the particulars of the coronation of Charles I. Several editions of the Form and Order of Charles II.'s coronation at Scone in 1651 were published at the time in 4to. at Aberdeen; reprinted at London in folio, 1660; and the entertainment of Charles II. in his passage through London to his coronation, with a narrative of the ceremony at the coronation, by John Ogilby, with plates by Hollar, fol., London, 1662. Sandford's 'History of the Coronation of James II.,' fol., London, 1687, illustrated with very numerous engravings, is the most complete of all our works upon English coronations published by authority. That of George IV., of which two portions only appeared, was far more splendid, with coloured plates, but remains unfinished.

A very antient MS. of the ceremonial of crowning the emperors at Aix-la-Chapelle was purchased at the last of the sales of Prince Talleyrand's libraries, by the late Mrs. Banks, and is now among the additional manuscripts in the British Museum. Of foreign published coronations, that of Charles V. at Bologna as emperor, in 1530, is one of the most curious, engraved in a succession of plates upon a roll of considerable length. The 'Sacre de Louis XV., Roy de France et de Navarre, dans l' Eglise de Reims, 25 Oct. 1722,' is a work of pre-eminent splendour, full of finished engravings. The 'Description of the Ceremonies at the Coronation of Napoleon as Emperor of France, with his Consort Josephine, 2 Dec. 1804,' is a work of equal size, but the engravings are chiefly in outline: folio, Paris, 1807. There is a volume, with engravings, of the coronation of the empress Anne of Russia, fol. Petersburg, 1731; and many others might be enumerated.

The formulary which has served as the general model for the English coronations since the time of Edward III. is the 'Liber Regalis,' deposited in the archives of the dean and chapter of Westminster, and kept with a religious care. It is supposed to have been written for the particular instructions of the prelates who attended at the coronation of King Richard II. and his queen. Copies of this manuscript, without its illuminations, are preserved in one or two of our manuscript libraries. The substance of the ceremonial directed in it is abridged in Strutt's 'Manners and Customs,' vol. ii. p. 22-37.

The following is the form of and ceremonial in administering the *Coronation Oath* to our kings:—Sermon being ended, and the King having made and signed the declaration, the Archbishop goes to the King, and standing before him, administers the Coronation Oath, first asking the King 'Sir, is your Majesty willing to take the Oath?' and the King answering, 'I am willing;' the Archbishop ministereth these Questions; and the King, having a Copy of the printed Form and Order of the Coronation service in his hands, answers each Question severally as follows:—

Archb. 'Will you solemnly promise and swear to govern the People of this United Kingdom of *Great Britain and Ireland*, and the Dominions thereto belonging, according to the Statutes in Parliament agreed on, and the respective Laws and Customs of the same?'

King. 'I solemnly promise so to do.'

Archb. 'Will you to your Power cause Law and Justice, in Mercy, to be executed in all your Judgments?'

King. 'I will.'

Archb. 'Will you to the utmost of your Power maintain the Laws of God, the true Profession of the Gospel, and the Protestant Reformed Religion established by Law? And will you maintain and preserve inviolably the settlement of the United Church of *England* and *Ireland*, and the doctrine, worship, discipline, and government thereof, as by Law established within *England* and *Ireland*, and the territories thereunto belonging? And will you preserve unto the Bishops and Clergy of England and Ireland, and to the United Church committed to their charge, all such rights and privileges as by Law do or shall appertain to Them, or any of them?'

King. 'All this I promise to do.'

Then the King arising out of his Chair, supported as before, and assisted by the Lord Great Chamberlain, the Sword of State being carried before him, shall go to the Altar, and there being uncovered, make his solemn Oath in the sight of all the People to observe the premises: laying his right hand upon the Holy Gospel in the Great Bible, which was before carried in the Procession, and is now brought from the Altar by the Archbishop, and tendered to him as he kneels upon the steps, saying these words:

'The Things which I have here promised I will perform and keep, So help me God.'

Then the King kisseth the Book, and signeth the Oath. (See the *Form and Order observed in the Coronation of his Majesty King George IV.*, 4to., London, 1821.)

CORONER. The coroner (*coronator*) is an antient officer by the common law of England. The name is said by Lord Coke to be derived '*a coronâ*, because he is an officer of the crown, and hath conusance of some pleas which are called *placita coronæ*.' In this general sense the chief justice of the Court of King's Bench is by virtue of his office the supreme coroner of all England, and may, if he pleases, hold an inquest, or otherwise exercise the office of coroner, in any part of the kingdom. Lord Coke mentions an instance in which Chief Justice Fineux in the reign of Henry VII. held an inquest on the body of a man slain in open rebellion, 5 *Reports*, 51. In this sense also, the Master of the Crown Office in the Court of King's Bench, is styled the 'coroner or attorney for the king;' his business being confined to pleas of the crown discussed in that court. But the officers now usually understood by this term are the coroners of counties, who are of high antiquity, being said in one of the most antient treatises on the common law to have been ordained together with the sheriffs to keep the peace of counties when the earls gave up the wardship. (*Mirror*, c. i. § 3.) In early times too, the office appears to have been one of great estimation; for by the statute 3 Edw. I. c. 10, they are required to be knights, and by the 28 Edw. III. c. 6, they must be 'of the most meet and most lawful men of the county.' By the 14 Edw. III. st. 1. c. 8, 'no coroner shall be chosen unless he have land in fee sufficient in the county, whereof he may answer to all manner of people.' No peculiar qualification is now required, though Serjeant Hawkins seems to express an opinion that the persons chosen, though not knights, must be 'of good substance and credit.' (Hawkins's *Pleas of the Crown*, book ii., cap. 9.) Most commonly there are four coroners in each county; but the number varies according to the usage of different counties. There have been recent instances in which, upon a representation made to the lord chancellor by the magistrates, that the existing number of coroners was insufficient for the business of the county, writs have issued for the election of additional coroners. (See 3 Swanston's *Reports*, 131.)

Coroners of counties are elected under the direction of the stat. 28 Edw. III. c. 6, by the freeholders in the county court, in the same manner as sheriffs and conservators of the peace formerly were; the election takes place by virtue of an antient king's writ, *De Coronatore Eligendo*, returnable in chancery. A recent statute, the 58 Geo. III. c. 95, makes detailed provisions for conducting these elections. By that Act, the sheriff is to proceed to the election of a coroner at the usual place for such elections at the next county court, unless such court occurs within six days after the receipt of the writ; if it occurs within such six days, he is to adjourn the court for the purpose of the election to some convenient time, not exceeding fourteen days. If the election is not determined upon a view by the consent of the freeholders present, the sheriff shall take a poll, which may continue open for ten days (Sunday excepted). The reasonable expenses of the sheriff at the election are to be paid, in equal proportions, by the candidates. After his election is declared, the coroner takes an oath of office before the sheriff.

Coroners in counties are elected for life; but if they accept an office incompatible with the duties, such as that of sheriff, or dwell in a remote part of the county, or are incapacitated by age or infirmity, they are removable by means of the writ *De Coronatore Exonerando*; and by the stat. 25 Geo. II. c. 29, § 6, they may be removed upon conviction of extortion, wilful neglect of duty, or misdemeanor in their office. The great seal has authority however, independently of the above statute, to remove coroners for neglect of duty. (1 Jacob and Walker's *Reports*, 451.)

At common law the coroner had authority to hear and determine felonies; but his powers in this respect were expressly abrogated by Magna Charta, cap. 17. The most usual duty of a coroner is that of taking inquisitions of death; and though his duties, as well as his authority in this respect, are said to have existed at common law, they are declared by the 4 Edw. I. stat. 2, commonly called the statute *De Officio Coronatoris*. By the directions of that statute, 'the coroner, upon information, shall go to the places where any be slain, or suddenly dead or wounded, and shall forthwith command four of the next towns, or five or six, to appear before him in such a place; and when they are come thither, the coroner, upon the oath of them, shall inquire in this manner; that is to wit, if they know where the person was slain, whether it were in any house, field, bed, tavern, or company, and who were there; who are culpable, either of the act, or of the force; and who were present, either men or women, and of what age soever they be, if they can speak, or have any discretion; and how many soever be found culpable, they shall be taken and delivered to the sheriff, and shall be committed to the gaol; and such as be found and be not culpable, shall be attached until the coming of the judge of assize.' And it is declared by the same statute, that 'if it fortune any such man be slain, which is found in the fields or in woods, first it is to be inquired whether he were slain in the same place, or not; and if he were brought and laid there, they should do so much as they can to follow their steps that brought the body thither, whether he were brought upon a horse or in a cart. It shall also be inquired if the dead person were known, or else a stranger, and where he lay the night before.' It is declared also by the same statute, that 'all wounds ought to be viewed, the length, breadth and deepness; and with what weapons; and in what part of the body the wound or hurt is; and how many be culpable; and how many wounds there be; and who gave the wound.' In like manner it is to be inquired by the coroner 'of them that be drowned, or suddenly dead, whether they were so drowned or slain, or strangled by the sign of a cord tied straight about their necks, or about any of their members, or upon any other hurt found upon their bodies. And if they were not slain, then ought the coroner to attach the finders and all other in the company.' The provisions of this ancient statute are still in force, and are to be followed by coroners in all their particular directions as nearly as possible at the present day in inquisitions of death. In case of a death happening upon the high sea, inquisitions are taken before the Admiralty coroner, who is appointed by the king or the Lord Admiral; and the county coroners have in such a case no jurisdiction. The inquisitions taken before the Admiralty coroner are returned to the Commissioners of the Admiralty under stat. 28 Hen. VIII., c. 15.

The coroner has authority to assemble a jury by means of a precept to the constables of the hundred or adjoining township, and the names of jurors who make default may be returned by him to the judges of assize, who may fine them. When the jury are assembled, they are charged and sworn by the coroner to inquire, upon view of the body, how the party came by his death. The coroner has no authority to take an inquisition of death, except upon view of the body by himself and the jury; and if he does so, the inquisition is wholly void. (Rex v. Ferrand, 3 Barn. and Ald. *Reports*, 260.) If a body liable to an inquest has been buried before the coroner has notice of the circumstances of the death, he has authority to cause it to be disinterred for the purpose of holding the inquest, provided he does so within a reasonable time. By a recent statute (7 Geo. IV. c. 64, § 4), which repeals an antient enactment on this subject, it is provided that 'every coroner, upon any inquisition before him taken, whereby any person shall be indicted for manslaughter or murder, or as an accessary to murder before the fact, shall put in writing the evidence given to the jury before him, or as much thereof as shall be material; and shall have authority to bind by recognizance all such persons as know or declare anything material touching the said manslaughter or murder, or the said offence of being accessary to murder, to appear at the next court of oyer and terminer, or gaol delivery, or superior criminal court of a county palatine, or great sessions, at which the trial is to be, then and there to prosecute or give evidence against the party charged; and every such coroner shall certify and subscribe the same evidence, and all such recognizances, and also the inquisition before him taken, and shall deliver the same to the proper officer of the court in which the trial is to be, before or at the opening of the court.' And by a subsequent section, authority is given to the court to which the inquisition ought to be delivered to examine in a summary manner into any offence committed by the coroner against the act, and to punish him by fine. The coroner's inquisition may be removed into the Court of King's Bench, and the facts found may be traversed by the personal representative of the deceased; or the court may make it for any apparent defect.

For every inquisition taken in any place contributing to the county rates, the coroner is entitled to a fee of 20*s.*, and also to 9*d.* for every mile he is obliged to travel from his usual place of abode for the purpose of taking it, to be paid by order of sessions out of the county rates. By a recent act of parliament, 6 and 7 Will. IV., c. 89, the coroner is empowered to order the attendance of legally-qualified medical practitioners upon an inquisition of death, and to direct the performance of a *post mortem* examination; and if the majority of the jury are dissatisfied with the first examination, they may call upon the coroner to summon a second medical witness, to perform a *post mortem* examination, whether it has been performed before or not. The statute also authorizes the coroner to make an order for the payment of a fee of one guinea to such witness, if he has not performed a *post mortem* examination, and of two guineas if he has performed such examination. Medical practitioners are also liable to a penalty of *5l.* if they neglect to attend.

The coroner has also occasionally to exercise a ministerial office, where the sheriff is incapable of acting. Thus where an exception is taken to the sheriff on the ground of partiality or interest, the king's writs are directed to the coroners. This incident to the office of coroners points distinctly to their antient character as ministerial officers of the crown.

By the Municipal Reform Act, 5 and 6 Will. IV. c. 76, § 62, the council of every borough, to which a separate court of quarter sessions has been granted, is empowered to appoint a fit person, not being an alderman or councillor, to be coroner of the borough, who is to hold his office during good behaviour. The fees and general duties of borough coroners are the same as those of county coroners; but the former are required by the statute to make an annual return to the secretary of state of all inquests of death taken by them. [DEODAND.] (See Hawkins's *Pleas of the Crown*, book ii., cap. 9; Burn's *Justice*, tit. 'Coroner;' and Jervis's *Practical Treatise on the Office and Duties of Coroners*.)

CORONET, an inferior kind of crown worn by the nobility. Of coronets worn by foreign nobility much may be seen in Selden's 'Titles of Honour,' and in Montfaucon; see also Gough's 'Sepulchral Monuments,' vol. i. pp. 133, 134. No coronets belonging to peers can be found in England earlier than the time of Henry III. The coronet seems at first to have been the distinctive mark of an earl. William de Valence, earl of Pembroke, who died in 1304, and is buried in Westminster Abbey, has only a plain fillet. Aymer de Valence, however, acknowledged by his treasurer the receipt of a coronet at his creation of earl in 1319. (See Gough, *Sep. Mon.*, i. p. 86, from Selden's *Tit. of Hon.*) John of Eltham, second son of Edward III., who died in 1334, and is also buried in Westminster Abbey, has a coronet on which are leaves; it is the most antient of the sort we meet with. Edward the Black Prince, who is buried at Canterbury, has his helmet adorned with a coronet of oak-leaves, formerly enriched with paste, or false stones, of which the collets only remain. (Ibid. i. 136.)

Of the coronets of the British nobility, as at present worn, all surround caps of crimson velvet turned up with ermine. That of a duke is a circle of gold, richly chased, having on the edge eight strawberry leaves of equal height: that of a marquess, a circle set round with four strawberry leaves and as many pearls on pyramidal points of equal height, alternately: the earl's coronet has eight pyramidal points (five only being seen at a time), with as many pearls on the tops, placed alternately with as many strawberry leaves, lower than the pearls. The viscount has only pearls, without any limited number, placed on the circle itself all round. A baron has only six pearls set at equal distance. Viscounts and barons had no coronets allowed them till after Queen Elizabeth's reign; the former had them granted by king James I., the latter by a grant from Charles II. in the thirteenth year of his reign. In Sir Symonds D'Ewes's letter, giving an account of the coronation of king Charles I. (already referred to under CORONATION), it is expressly said that when the higher order of the peerage put on their coronets, the barons sate bare.

The coronet of the kings of arms is a plain circle of gold, bearing sixteen leaves, eight of which are higher than the others: and on the band, the motto 'Miserere mei, Deus.'

CORO'NULA. [CIRRIPEDA.]

CORPORAL (in the French service *caporal*), a non-commissioned officer in a battalion of infantry. The word is derived from the Italian *capo*, signifying a head; and the title denotes that the person who bore it was the chief of a small squadron or party. During the reigns of Mary and Elizabeth, the corporal was a kind of brigade-major; he superintended the marches of the companies, and commanded the troops who were sent out on skirmishing parties. But at present he is immediately under the serjeant; he places and relieves the sentinels, and at drill he has charge of one of the squads. In the ranks he does the same duty as a private soldier, but his pay is rather higher.

Lance-corporal, originally *lance-spesata*, denoting a broken or spent lance, was a term applied to a cavalry soldier who had broken his lance or lost his horse in action, and was subsequently retained as a volunteer in the infantry till he could be remounted. He is now merely a soldier who does the duty of a corporal, but without the pay, previously to obtaining the full appointment to that grade.

CORPORATION. For the purpose of maintaining and perpetuating the uninterrupted enjoyment of certain powers, rights, property, or privileges, it has been found convenient to create a sort of artificial person, or body-politic, not liable to the ordinary casualties which affect the transmission of private rights, but capable, by its constitution, of indefinitely continuing its own existence. This artificial person is in our law called an *incorporation*, *corporation*, or *body-corporate*. The last of these names is the most correct, as well as the earliest, that occurs in our law. The former import rather the act of creating the body than the body itself, and do not appear to have been used in their modern sense till the fifteenth century. The institution of such bodies under similar or different names was common among the Romans [COLLEGIUM], and we believe we may venture to say that bodies possessing all the essential characteristics of modern corporations were known in the Greek polities.

Corporations are variously distinguished into aggregate and sole corporations, corporations ecclesiastical and lay, civil and eleemosynary, regular and secular. Again, they are divisible into corporations of a public character established for the purpose of general or local government, and those which have been created to facilitate the object of private associations.

The idea of a corporation *sole*, formed by a succession of single persons, occupying a particular office or station, and each in virtue of his character succeeding to the rights and powers of his predecessor, has been said to be peculiar to our law, and to be an improvement upon the original invention. (4 Blackstone's *Comment.* 469.) The king, a bishop, a parson, the chamberlain of London, &c. are usually referred to as examples of such corporations sole. It may be observed, however, with respect to the supposed novelty of the invention, that similar cases of official succession and representation probably occur in almost every system of laws, so that the claim of originality must be restricted to the mere name; and even in this respect, we incline to the opinion of Dr. Wooddesson, 'that as so little of the law of corporations in general applies to corporations-sole, it might have been better to have given them some other denomination.' (1 Wooddes. *Vin. Lect.* 471, 2.) The following notice will be chiefly confined to the law of corporations-aggregate.

The members of cathedral and collegiate chapters are examples of secular ecclesiastical corporations aggregate. Before the reformation the law recognised a class of eccle siastical corporations-*regular*, consisting of abbots or priors and their respective convents, and, as it should seem, the societies of friars or mendicant orders. (Brooks' *Abr. Corporations*, pl. 12.) The heads of these conventual bodies were often distinct corporations-sole, as is still the case in many of the modern secular ecclesiastical establishments.

Colleges, in or out of the universities, and incorporated schools and hospitals, are instances of eleemosynary corporations; being endowed and established for the purpose of perpetuating the bounty of their respective founders.

But the largest class of corporations, and those which are most varied in their object and character, are lay and civil incorporations. Among these may be reckoned the universities, the municipal governments of different cities and boroughs, the East India Company, the Bank of England, the Colleges of Physicians and of Surgeons, the Royal Society and Academy, the Society of Antiquaries, and an infinite variety of commercial and other companies erected by charter or by act of parliament.

A corporation cannot be created by any authority except that of the king or the parliament. Where any such body has existed from time beyond memory, it is presumed to have a legitimate origin in one or the other of the above sources. As a matter of curiosity it may be noticed here, that until the period of the Reformation the pope and the bishop of the diocese were considered necessary parties to the foundation of any new society of monks or *regular* clergy. The refusal of the former to confirm the foundation of Sion Monastery in the reign of Henry VI. is known to have caused an alteration in the original plan of that establishment. (Cotton's *Abridgment*, 589.)

The principal incidents and attributes of a corporation-aggregate are the following:—

1. It can purchase, convey, and hold land or goods in perpetual succession, notwithstanding the changes and fluctuations that occur among the members successively appointed to fill the vacancies which happen in it.

2. It can become a party to proceedings at law, or to contracts, by the corporate name given to it on its foundation.

3. The act or assent of the majority is binding on all the rest; such at least is the general rule, wherever the instrument of foundation does not otherwise provide.

4. It signifies its assent, and testifies its corporate acts, by a common seal, without which hardly any voluntary contract is binding on the body politic.

5. It is competent to enact regulations called bylaws, binding on the members of the corporation, and, in some cases, on strangers within the scope of their jurisdiction. [Bylaw.]

6. The particular members of the body are not in general personally responsible for the acts, contracts, or defaults of the corporation. This exemption from individual liability makes it very desirable for commercial and other trading companies to obtain charters of incorporation, by which the members escape the risk of ordinary partnerships.

7. The personal defaults or misconduct of its members cannot in general be visited on the corporate body.

With respect to some of these incidents, it should be observed that the capacity of holding land is restrained by the statutes of mortmain, which make it necessary to obtain an express license to that effect from the crown or the legislature. This is agreeable to the Roman law, which forbids aggregated bodies of this kind 'hereditatem capere sine speciali privilegio.' [Mortmain.]

So with regard to the exemption from personal responsibility in respect of corporate acts, it must not be supposed that the members of the body can directly authorize an injury to be done to another under the sanction of a corporate act, without incurring the usual personal consequences. Thus, if a corporation should by an instrument under the common seal direct a trespass to be committed on a third person, every member of the majority who was present, and actually assenting to the act, would be liable in his private capacity.

The mode of filling up vacancies which occur in the constituent members of the body politic, is in every case determined either by the express provisions of the charter of incorporation, or (in the case of immemorial corporations) by ancient usage. The most common and regular method of maintaining the succession is by election. Sometimes the successor is appointed by the crown, or by a patron or founder. In the case of ecclesiastical corporations the forms of election are in many instances preserved, but the substantial right of nomination has long been exercised either by the crown or by some authority or person independent of the chapter or other corporate body.

With a view to ensure the performance of those duties, and a strict adherence to those regulations which are imposed upon corporate bodies either by the will of their founders or the general tenor of their charters, the law has appointed certain persons and courts, whose office it is to exercise a coercive power of superintendence and correction.

In the instance of eleemosynary bodies, as colleges, schools, and hospitals, the person so appointed is called a *visitor*, and is either the heir of the original founder, or some person specially assigned by him, or (in the absence of either of these) the king. [College.]

In ecclesiastical corporations, the bishop of the diocese is, of common right, the visitor. His right of visitation formerly also extended over all the monastic establishments within the same district, unless the abbot or other head of the convent had purchased a papal bull of exemption, the effect of which was to subject him to the sole superintendence of the pope himself. With regard to other lay corporations, such as municipal corporations, trading companies, and similar bodies, their irregularities are left for correction to the ordinary courts of justice, which upon a proper application to them will be found to possess powers abundantly adequate to that end.

Having treated of the creation and incidents of corporations, let us now consider how they may be dissolved.

1. A corporation may be extinguished by the natural death of all the members of it.

2. Where a select body of definite number, constituting an integral part of the corporation, is so reduced by death, or other vacancy, that a majority cannot be present at corporate meetings, the whole body becomes incapable of doing any corporate act, and, according to the better opinion, the corporation is thereby extinguished. This is the result of a rule in corporation-law,—that every act must be sanctioned, not only by a majority of the number actually present at a meeting, but also at a meeting composed of a majority of each definite body into which the corporation has been sub divided by the charter. Thus, if a corporation consists of a mayor, twelve aldermen, and an indefinite number of burgesses, at least seven aldermen must be present at every meeting; nor can a legal meeting be convened in the absence of the mayor, except for the purpose of electing a new one. The tendency of the rule is to compel the elective body to fill up vacancies without delay, and to secure the attendance of a competent number when the public business is transacted. The rule is inapplicable to a body of *indefinite* number, such as the general body of freemen; and it is liable to be modified and controlled by the charter, or other fundamental constitution of the corporation. The rule of the civil law, requiring the actual presence of two-thirds of the corporation at elections, seems to have been dictated by a similar policy: but Sir W. Blackstone (*Commentaries*, vol. i. p. 478) is in error, when he supposes that a bare majority of the body so assembled could not bind the rest. (See Pancirollus, *de Magist. Municip. apud Græivum.*)

3rd. A dissolution may be effected by a formal surrender to the crown; at least where the incorporation is by charter, and where all persons interested in it are concurring and competent parties.

4th. A corporation may be forfeited, where the trust for which it was created is broken, and its institution perverted. Such a forfeiture can only be declared by judgment of the superior courts on process issued in the ordinary course of justice, in which the fact of misuser, if denied, must be submitted to a jury.

Having already alluded to the religious corporations of monks and other regular clergy formerly existing in this country, we may here observe that the validity of the surrenders obtained by the crown at their suppression was deemed sufficiently doubtful to require the confirmation of an express act of parliament. Even then, in the opinion of the canonists, the *spiritual* incorporations still continued until suppressed by competent spiritual authority, and were capable of perpetuation, although their possessions were lost, and their civil rights extinguished. Hence it was that the Brigettine nuns of Sion, suppressed by Henry VIII., restored by Queen Mary, and again ejected by her successor, continued to maintain a migratory existence for two centuries and a half in Holland, Belgium, France, and Portugal, and still claimed to be the same convent which Henry V. had founded on the banks of the Thames. (See letter of the Abbé Mann, 13 *Archæologia.*)

Under Boroughs of England and Wales will be found a more particular description of that class of corporations which have been erected in this country for the purpose of local municipal government, and of the recent legislative changes which their constitution has undergone.

CORPORATION AND TEST ACTS. [Boroughs of England and Wales, vol. v. p. 202.]

CORPORATIONS (MUNICIPAL) OF IRELAND. The borough system of Ireland may be described in general as an immediate branch from that of England, which, at the same time that it has amply shared the effects of the policy of the crown in latter ages towards municipal bodies in general, has also been modified by the very peculiar and often fluctuating political circumstances of that division of the British empire. The motives which actuated the executive government of England in the course which it so long and so steadily pursued towards the entire remodelling of the town constitutions, and the operation of that course of proceeding in undermining the independence and destroying the local benefit of the municipal governments, we have endeavoured to trace distinctly in a preceding article [Boroughs of England and Wales]. In this place, therefore, the historical part of our notice must be limited chiefly to the marking, in the general course of Anglo-Irish history, the progress of the Irish corporation system in particular.

The whole system of boroughs, which holds so conspicuous and important a place in the history of the political and general civilization of the British Islands, is, in nature as well as name, of purely Teutonic original; that particular species of organization having ever been found repugnant to the habits and spirit of the Celtic nations in their independent state. Thus, in Great Britain itself, its local limits advanced with the growth and extension of the Germanic colonies both north and south of the Tweed; and in Ireland we find that the native race were strangers to it until the settlement on their eastern and southern coasts, about the ninth century, of some of those Danish, North-man, or, as they were called in Ireland, Ost-man (East-man) bands, in that great æra of the permanent migrations of those formidable sea-rovers. Of these maritime settlements, five, viz., Dublin, Wexford, Waterford, Cork, and Limerick, appear as places of note at the commencement of the Anglo-Norman conquests in the island, and as possessing that municipal organization which constantly attended all the branches of the Teutonic race. The Ost-man colonists of Ireland, too, though for a considerable time after their first settlement they adhered to their antient paganism, had at the period in question, owing undoubtedly to the amicable relations which had arisen between them and the Irish population, and to the exertions of the Irish clergy, been long in the profession of Christianity; so that, it should seem, the first Anglo-Norman invaders might have recognised in them some degree of national affinity. But being ignorant and brutal, though subtle and daring adventurers, their thirst for plunder and for territorial acquisition would not permit them, in their career of murderous rapine, to make any distinction in treatment between the Scandinavian and the Celtic blood, between the Ost-man and the Irishman.

This unsparing temper of the early private invaders perfectly coincided with the policy of the English crown; and so soon as Henry II. had found leisure to take the business of the invasion into his own hands, one of his principal measures for securing the footing of his government on the Irish soil was the colonization of the Ost man ports with English or Anglo-Norman settlers. Thus the Ost-men of Dublin were thrust without the walls of their city to inhabit the suburb thence called Ost-man town, and still, by corruption, Oxmantown, giving place to a band of mercantile settlers from Bristol, who became the English king's 'burgesses' of Dublin, with a charter of liberties modelled exactly upon that of Bristol. In like manner, during the various fluctuations of the territorial conquest, down to its completion at the close of the reign of Elizabeth, every permanent extension of the English frontier extended the English organization of the territory, of which the establishment of fortified towns, with inhabitants municipally organized and trained to arms, was a constant and a prominent feature. Of such of the municipalities established during that long period as still exist, or have left distinct traces, we give an enumeration from the report of the commissioners on the Irish branch of the late municipal inquiry. They are 45 in number, viz., Ardee, Ardfert, Athboy, Athenry, Bannow, Callan, Carlingford, Carlow, Carrickfergus, Cashel, Clonmel, Cork, Dingle, Donegal, Drogheda, Dublin, Duleek, Dundalk, Dungarvan, Feathard (county of Tipperary), Fore, Galway, Gowran, Inistiogue, Irishtown, Kells, Kildare, Kilkenny, Kilmallock, Kinsale, Knocktopher, Limerick, Maryborough, Naas, Navan, New Ross, Old Leighlin, Philipstown, Roscommon, Taghmon, Thomastown, Trim, Waterford, Wexford, Youghal.

The municipal commissioners could not help observing the 'marked distinction in the language of their charters, as to the constitutions of the municipal corporations in Ireland, according to the dates of those instruments,' that is, according as they were granted before or after the commencement of the reign of James I. The source of this remarkable difference will be found clearly explained on referring to the historical part of our account of the 'Boroughs of England and Wales,' (vol. v., p. 202,) where it will be seen that this was precisely the period when the crown was most actively exerting itself to secure the power of moulding the borough constitutions at its pleasure; and that in the middle of James's reign was given the notable judicial decision in favour of the prerogative of establishing close boroughs by charter, upon which the crown ever afterwards acted. In the same historical summary it appears that, far as the exercise of this power was carried in England, yet, in the hands of the Stuarts at least, it failed of the complete attainment of its object. But in Ireland, which presented a much clearer field for its exertion, it was used both lavishly and effectually, not only in establishing new boroughs, but in reframing the constitutions of the old ones. In the 'plantation of Ulster,' as the settling of British inhabitants upon the lately-forfeited lands there was then denominated, by charters granted by James to various 'undertakers' of the plantation, a number of incorporations were made beforehand, on the new and approved plan of towns 'to be built' on the respective lands. Another and very similar mode of making boroughs in Ireland at this period was the incorporating of some village already existing, at the same time placing its corporation under the absolute control of the lord of the manor existing previously or newly erected. The whole number of boroughs thus created by James I. and his two immediate successors, a large proportion of which were originally of the class just described, though some of them have since risen to importance, is 61, viz., by James I., Agher, Armagh, Askeaton, Athlone, Athy, Ballinakill, Ballyshannon, Baltimore, Bandonbridge, Bangor, Belfast, Belturbet, Boyle, Carrick-on-Shannon, Castlebar, Cavan, Charlemont, Clogher, Cloghnakilty, Coleraine, Dungannon, Ennis, Enniscorthy, Enniskillen, Feathard (county of Wexford), Gorey, Hillsborough, Jamestown, Kilbeggan, Killileagh, Killybegs, Lifford, Lismore, Londonderry, Lymavady, Mallow, Monaghan, Newry, Newtownards, Sligo, St. Johnstown (county of Donegal), Strabane, Tallagh, Tralee, Tuam, Wicklow; by Charles I., Banagher; by Charles II., Baltinglass, Blessington, Cariesfort, Castlemartyr, Charleville, Dunleer, Granard, Harristown, Lanesborough, Longford, Middleton, Portarlington, St. Johnstowne (county of Longford), Tulske.

Each of the 106 corporations in the two lists given above, sent two members to the Irish House of Commons, and many of those in the latter list served scarcely any other purpose from the beginning, their incorporation having been little more than a cover for the nomination of the two members by the landed proprietor. Many had consequently fallen into virtual disuse long before the legislative union with England. All however seem to have exercised some municipal function within the last century, excepting these seven,—Baltimore, Clogher, Dungarvan, Lismore, Mallow, Newry, Tallagh. With respect to the five following, the existence in them either of a corporation or of burgage tenure is noticed in antient records, but no charter of incorporation has been discovered, viz., Clonmines, Downpatrick, Ratoath, Swords, Taghmon, each of which likewise sent two representatives to the Irish parliament.

The mode of incorporation adopted by the crown in erecting the modern boroughs, presents little more than a parallel to the course it was pursuing in England; but in order to explain how it was that the subversion which it effected in the *antient* borough constitutions of Ireland was so much more rapid and more complete than in those of England, we must advert to some very remarkable features in the politico-religious history of Ireland.

In the very first establishment of boroughs in that country, the Anglo-Norman crown had found itself under an absolute necessity of placing the new municipalities on the footing of the most favoured class of boroughs in England: the security of the English power upon the Irish soil required that the incorporated burgesses should be strong and prompt for defensive warfare; and, to be so, it was essential that they should be free. Not only therefore were the municipal and the parliamentary franchise enjoyed by the inhabitant householders at large, but their common exemption from burdensome duties and services, and from feudal jurisdictions, was rendered more effective than in England itself: and such, on the whole, did the civil condition of the Anglo-Irish boroughs continue to be until the completion of the territorial conquest. This completion, while it relieved the antient boroughs from the danger of external attack from the unsubdued native Irish population, rendered their internal freedom more liable to attack from the English crown, at length relieved from the risk and embarrassment of the old contest with 'the Irish enemy.' Another remarkable circumstance appeared just at the same period, which, while it commenced an entirely new era in Anglo-Irish history, placed in the hands of the English government a weapon of sweeping efficiency for the prosecution in Ireland of its new policy towards antient boroughs in general. When Henry VIII. had abolished, to his own advantage, the papal supremacy in England, the new religious reformation, though received without difficulty by that small portion of the Anglo-Irish population which had close connexions with the English government, made little progress among that population at large: the great majority adhered as steadfastly to Catholicism as the native Irish themselves, and thus became involved with them in one and the same political proscription. To avoid giving a false colour to the whole subsequent tenor of Anglo-Irish history, it is most important to observe distinctly, that ever since the permanent establishment of the Church of England reformation, the great source of insolent political ascendency on the one hand, and indignant political exclusion on the other, has been the difference, not of *races*, but of *creeds;* and that of the *English* blood now existing on the Irish soil, far the greater portion circulates in the veins of those who are still subjected to political depression on *religious* grounds alone. In the reign of Elizabeth two statutes were passed relating to the crown's religious supremacy and to the uniformity of common prayer; but her government was too discreet to enforce either of them, except as to the clergy and the leading officers acting in civil capacities under the government. But James I. sent presidents or military governors through the Irish provinces for the immediate enforcement of the statutes in question, especially in the corporate towns; and from the language of the historians who panegyrize these presidents, we find that their threat was 'to cut with King James's sword King John's charters in pieces; to level the cities with the ground, and strew them with salt.' On arriving at these towns, they called before them the mayors and other principal corporate officers, and, after some further proceedings, deposed them, imprisoned them during his majesty's pleasure, imposed on them heavy pecuniary penalties, and for payment of these had their goods sold in the public streets. For a knowledge of these latter proceedings we are not indebted to historians, but the detail exists in reports exultingly made by the presidents themselves to the government of the day. The leading municipal officers being thus ejected, others, of known pliancy, were substituted in their places; and these persons readily resigned the rights and liberties of their towns into the king's hands, and took out new charters of incorporation. And here it was that the leading object of the crown was accomplished. To the several antient boroughs new charters were soon issued, so framed as to leave but a very small share of municipal power to the great body of the inhabitants. In these charters individuals were expressly nominated to fill the offices of mayor, sheriff, recorder, &c.: the members of the governing council of the corporations were in most instances nominated in like manner, with exclusive power to appoint their successors; so that the inhabitants at large were almost wholly deprived of that share in their local government which, under the original constitutions of these boroughs, they had enjoyed for upwards of four centuries.

The system of exclusion was closely pursued by the persons thus newly placed in corporate authority, who, by this means, gradually severed their interests from those of the inhabitants at large: still they were unable wholly to extinguish the municipal rights of the antient class of freemen, who, though excluded by test oaths from the higher corporate offices, continued pretty numerous until the year 1654, when the army of the Commonwealth obtained possession of all such towns. No sooner was Charles II. restored than the Lords Justices of Ireland issued a proclamation confirming to every one holding by grant or contract with 'the late usurped powers,' all their lands and possessions, as well in towns as elsewhere, during a given period. Under the authority of this proclamation, when the Irish legislature was called together for the general arrangement of landed property, and other public interests, which had been completely subverted by so many years of civil war, the Commonwealth soldiery, who, under Cromwell, had possessed themselves of the walled towns, were able to return an overwhelming majority of members to that parliament which passed the Acts of Settlement and Explanation. The permanence of their interest was thus provided for; and the estates, rights, and liberties of those corporate establishments were vested in a body of men but recently settled in the kingdom. The unjust exclusion consequently maintained, became, in the course of the same reign, a subject of inquiry with the Irish government; but, wavering as that government has so often been between justice and expediency, it procured no effectual change in that system, the evils of which it seemed to deplore.

One measure, however, was taken at this period, the tendency of which was to mitigate in some degree the spirit of absolute exclusion prevailing in the Irish municipalities. The Act of Explanation empowered the Lord Lieutenant and Council, within seven years, to make rules, orders, and directions, for the better regulation of all cities, walled towns, and corporations. By virtue of this power, the Lord Lieutenant and Council, in 1672, issued what are called the 'New Rules,' which ordained that thenceforward the elections of persons to serve the offices of mayor, sheriff, recorder, or town-clerk, of Dublin, Limerick, Galway, and the several other towns therein mentioned, should be subject to the approbation of the Lord Lieutenant and Council; and that no person should be capable of acting as mayor, recorder, sheriff, treasurer, alderman, town-clerk, common-councilman, or master or warden, until he should have taken the oath of supremacy, except such only with whose taking that oath the Lord Lieutenant should think fit, by name and in writing, to dispense. But that part of these New Rules which tended to restore the antient basis of the municipal franchise, was a provision that all 'foreigners, strangers, and aliens, being merchants, or skilled in any mystery, craft, or trade,' then or thereafter residing and inhabiting within those cities or towns, should, on paying down a fine to the mayor and common council, or other persons authorized to admit freemen, be admitted to the freedom of such city or town respectively, and if they desired it, into any guild, brotherhood, &c., therein; that any person refusing to admit them so applying for their freedom should, upon due proof before the Lord Lieutenant and Council, be for ever deprived of the freedom of such city or town; and further, that on such refusal of admission by the corporate authorities, such person so applying should, on tendering twenty shillings, and taking the oath of allegiance before any justice of peace in the adjoining county, be therefore deemed, to all intents and purposes, a freeman of such corporation, guild, &c. Thus, in spite of the exclusive system then in operation, every resident trader in the corporate towns of Ireland was enabled, under these rules and orders, to become a freeman; though still, except by special dispensation, he could not fill the higher municipal offices, unless by taking the oath of supremacy and giving the other tests then required.

But after the Revolution of 1688, the spirit and intention of this portion of these rules were wholly disregarded. Owing, indeed, in some degree to James II.'s unsuccessful attempts against his opponents in the corporate towns of Ireland, the system of absolute exclusion pursued in the early part of his brother's reign was revived with aggravated rigour; and under such circumstances little was to be expected from seeking the benefit of the rules and orders, or bringing in any other mode the rights of the excluded before such tribunals as then existed. From these causes, and from a sort of inviolability or sacredness of character which was thrown about corporate establishments in Ireland from the reign of William III. almost to the present time, the inhabitants at large of municipal towns have remained wholly unconnected in interests or feelings with the few individuals monopolizing all corporate authority.

The inquiry into the state of the municipal corporations of Ireland, commenced in 1833, was a branch of the general municipal inquiry which naturally followed the passing of the parliamentary Reform Acts. The Irish Commissioners took as the basis of their local investigations the 117 places which sent representatives to the Irish parliament; all of which have been enumerated in the several lists given above, except the six following, which, though they were empowered by charter to return each two members to parliament, appear never to have possessed a municipal character; viz., Antrim, Doneraile, Lisburn, Mullingar, Randalstown, and Rathcormac. And of the various municipal corporations above mentioned, only sixty appear to be now effectively existing and exercising corporate functions. These we shall here enumerate in the order of their respective magnitudes, commencing with the most populous, and descending regularly downwards: they are, of 100,000 inhabitants and upwards, Dublin, Cork; from 100,000 to 50,000, Limerick, Belfast; from 50,000 to 20,000, Galway, Waterford, Kilkenny, Londonderry; from 20,000 to 10,000, Drogheda, Sligo, Clonmel, Kinsale, Athlone, Youghal, Wexford, Dundalk; from 10,000 to 5000, Bandonbridge, Tralee, Armagh, Carlow, Carrickfergus, Ennis, Cashel, Tuam, Callan, Enniskillen, Enniscorthy, Coleraine, New Ross; from 5000 to 3000, Charleville, Strabane, Longford, Athy, Navan, Dingle, Kells, Ardee, Monaghan, Naas, Cloghnakilty, Dungannon, Boyle, Feathard (co. Tipperary), Trim, Maryborough, Portarlington, Gorey; from 3000 to 1000, Thomastown, Bangor, Wicklow, Middleton, Belturbet, Kilbeggan, Baltinglass, Hillsborough, Athenry, Kilmallock, Killileagh; from 1000 to 900, Inistioge, Castlemartyr. Of the extinct corporations, 30 have become so since the legislative Union with Great Britain; these vary in population from 6000 downwards; but the greater part of them are under 1000, and several are inconsiderable villages.

In Ireland, the total inadequacy of the present basis of municipal constituency is yet more universally glaring and more injuriously operative than it was in the unreformed system of England. 'The rights from birth, marriage, and apprenticeship,' say the Irish Commissioners, 'have, even where most liberally admitted, failed to supply in the body of the corporations, a general constituency comprising or representing sufficiently the various classes of the inhabitants. The two former qualifications are necessarily limited to persons related to, or connected with, the old members; and the last (apprenticeship) leaves to the old members complete control as to the class from which the new may be selected: thus, when a particular party has gained an ascendency, these rights operate to preserve the corporate privileges to that party exclusively. The modes of admission which have become established in most corporations have further contributed to limit the number of freemen, and prevent the foundation of a general and comprehensive commonalty.... Possessed of these powers, the governing bodies have too commonly used them, without scruple, not as trusts to be exercised for the benefit of the community, but as the means of attaining for themselves an exclusive dominion over the general inhabitancy, and political influence in the election of members of parliament. The course which they seem to have almost universally pursued for this object has been to concede with the utmost parsimony to the inhabitants the right to become members of the corporations as freemen. Where the recognised rights to freedom are not directly resisted, difficulties are interposed to its attainment; in some cases, by the establishment of peculiar forms of admission, as in Bandonbridge, Dublin, and Drogheda, which give to the governing body, or some of its members, a direct power of negativing or suppressing the claims. In others, as in Kilkenny and Limerick, unnecessary delays or technical obstacles have been interposed in the investigation and consideration of the title to admission; while the power of admission by especial grace may at all times be exercised without limit, to counteract any increase on title supposed to be dangerous to the prevailing influence. The policy of the governing bodies has induced some of them, in recent instances, to endeavour to retrace their steps, and extend more liberally the corporate franchise, with the view of encountering the enlarged leasehold and household constituency introduced by the Reform Bill. Thus, in Clonmel, rights to freedom not recognised for eighty years prior to that Act being passed, have been since admitted. In Dundalk it was attempted to introduce a right of admission by birth, but unsuccessfully. In Waterford the same policy has led to the relaxation of restrictions previously existing on the attainment of freedom as of right. In Kinsale and Athlone, freemen were admitted in large numbers in 1831 for the same purpose, but the attempt was defeated by the provision of the Reform Act excluding honorary freemen admitted subsequently to the 30th of March in that year.'

The excessive abuse of the unlimited power of admitting non-residents into the local constituency, is a feature still more strongly marked in the character of the Irish corporations than in that of the English. 'In counties of cities and counties of towns,' say the commissioners, 'the acknowledged rights of the *freeholders* to vote at elections for members of parliament, while it has served to maintain the general independence of the community, has a decided though indirect tendency to the depression of the freemen as a class. The freeholders, who thus possessed the most valuable civil right without control of the corporate authorities, had less motive to seek admission as freemen; while the existence of an independent body of electors led, for the purpose of counteracting their influence, to the creation of non-resident freemen—a practice on the part of the corporations for the correction of which the legislature has lately interposed by one of the provisions of the Reform Act. In many corporations (we may instance those of Galway, Limerick, Cork, and Drogheda), the creation of non-resident freemen has prevailed to an extent apparently only limited by the necessity of providing a sufficient number in the interest of the corporation to bear down the resident freehold constituency. As members of the corporations for general municipal purposes, the non-resident freemen do not appear to have interfered; but such rights as they may have in that respect remain unaffected by the provisions of the Reform Act; and if the subject of contest should be of sufficient importance, they might still be resorted to by the governing body on occasion of the exercise of the corporate powers, where vested in the freemen at large.

'The admission of non-residents to such an extent seems quite inconsistent with the principles of municipal government and incorporation, and with the spirit of the charters, which are addressed to the citizens, commons, inhabitants, or commonalty of the corporate city or town, and abound in provisions for the benefit and exclusive advantages, commercial and civil, of those residing in the incorporated districts. We find the legislature itself, at a very early period, sanctioning and enforcing the principle and policy of a resident municipality, by a statute of the Irish parliament, passed in the tenth year of Henry VII. (c. 7), which enacts "that no city or great town receive or admit any person to be alderman, juror, or freeman within any of the said cities or towns, but such persons as have been prentice or have been continually inhabitant in the said cities or towns;" and (after some other provisions), "that if any city or town offend the premises or any part thereof, the mayor and commons of any such city or town, by whatever name they be incorporated by, to forfeit an hundred marks of money to the king as often as they or any of them shall offend the premises or any part of them." In practice, however, the terms of the charters and the intention of the legislature have alike been disregarded, and the provisions of the act of parliament have been considered as penal, but not prohibitory; imposing the prescribed penalty on the corporation which violates them, but not invalidating the admission of the persons in whose favour they are infringed. Election committees of the House of Commons have, in the cases of Limerick, Wexford, and Waterford, decided that the rights of election there were limited to freemen resident at the time of admission; but these decisions, which asserted a principle theretofore habitually violated in modern practice, have proceeded on evidence of the antient bye-laws and usages of these corporations, and in the case of Wexford on the special terms of the charter. In the case of Limerick, the legislature has interposed by the act for the regulation of that corporation, 4 Geo. IV., c. 126; and made residence at the time of admission a necessary qualification for freedom. In Carrickfergus, also, the usage has been in conformity with this principle.

'That the existence of such control and influence in such a body over the admission of the members is a main defect in the constitution of the municipal corporations, the results, contrasted with the objects of the institutions, appear to us to demonstrate. We apprehend the term municipal corporation may, in reference to our present inquiry, and on a view of the several charters which have come under our notice, be fairly considered to mean an incorporation of persons, inhabitants of, or connected with, a particular place or district, enabling them to conduct its local civil government. Accordingly, the regulation of the municipal district and its inhabitants, the preservation of the public peace within it by a magistracy chosen by and from the incorporated body, and the administration of justice to the community in domestic tribunals, are among the principal objects for which provision is made in the various charters of incorporation appearing to have been granted from time to time to the corporate cities and towns in Ireland. Another important object of many incorporations was the election of members to represent their respective cities and towns in parliament. A farther, and one which appears to have engaged more attention in former times than at present, was the protection and regulation of the local trade by means of commercial societies, or guilds. It appears to have been always considered conducive, if not necessary, to the attainment of the first object above noticed—that of providing for the regulation of the municipal district and its inhabitants—that the corporate body should be invested with powers to make ordinances or bye-laws for the purpose, and that such ordinances would be the more binding on the inhabitants of the district, and suited to their interests, if made with their common assent. We find, therefore, that in nearly all the charters of municipal corporations in Ireland in which the power of making bye-laws is expressly given (even in those the most restricted in other particulars), this power is vested in the whole body, including the commonalty equally with the other members. All the other objects sought by their creation alike imply that those institutions were originally designed for the peculiar and common benefit of the *residents of the corporate district*, and were intended to be identified in interest with them, and entitled to their confidence and support.

'But the consequences of such exercise as we have described of the power of admission to the freedom of the municipal corporations in Ireland, have been to establish a very different condition of those bodies. It has followed, that in many towns there is no recognised commonalty; that in others, where existing in name, it is entirely disproportioned to the inhabitants, and consists of a very small portion, of an exclusive character, not comprising the mercantile interests, nor representing the wealth, intelligence, or respectability of the town. The corporations are, not without reason, looked on by the great body of the inhabitants of the corporate districts with suspicion and distrust, as having interests distinct from and adverse to those of the general community, whom they thus studiously exclude from a participation in the municipal government. Their members frequently consist entirely of the relatives and adherents of particular individuals or families, and the principles of their association and those which regulate admission or exclusion, have rarely any connexion with the common benefit of the district or the wishes of its inhabitants. In far the greater number of the close corporations, the persons composing them are the mere nominees of the "patron" or "proprietor" of the borough: while in those apparently more enlarged they are admitted and associated in support of some particular political interest, most frequently at variance with the majority of the resident inhabitancy.'

'This system,' they continue, 'deserves peculiar notice in reference to your majesty's Roman Catholic subjects. In one corporation alone, that of Tuam, the majority of the governing body is Roman Catholic.....The laws which for a series of years operated to exclude those professing the Roman Catholic religion from corporations were repealed in the year 1793 by the statute 33 Geo. III., c. 21; but the Roman Catholics have hitherto derived little practical advantage from the change. In the close boroughs they are almost universally excluded from all corporate privileges. In the more considerable towns they have rarely been admitted even as freemen; and, with few exceptions, they are altogether excluded from the governing bodies. In some—and among these is the most important corporation in Ireland, that of Dublin—their admission is still resisted on avowed principles of sectarian distinction. Even in those corporations whose rights to freedom are acknowledged and conceded, the long operation of the penal code having prevented the acquisition of freedom by the immediate ancestors of the present Roman Catholic population, very few have been enabled, since its repeal, to establish the requisite titles. The admissions which have taken place, whether upon a claim of right or by favour, have, for the most part, been either the result of personal influence with the members of the governing body, or compliments to individuals of wealth or popularity. With the exceptions of Tuam, Galway, Wexford, and Waterford, the rule is exclusion. In Londonderry, at the passing of the Reform Act, there were only three Roman Catholic freemen. Previously to the relaxation of the penal code, the number of opulent Roman Catholics residing in the corporate cities and towns was necessarily limited. But since those changes in the laws which have enabled them to share in the general diffusion of wealth and in the benefits of unrestricted industry, they have risen and multiplied in the middle and upper classes, so that in most of the cities and towns they constitute, not only a majority of the whole population, but a large proportion of the more opulent orders. We feel bound to submit to your majesty that a system of municipal polity which excludes such a class of your majesty's subjects from all substantial corporate privilege and power must be essentially defective in its structure. It fails to secure to the different classes of the local community participation in the regulation of their own concerns; and it operates far more widely and more mischievously than by the mere denial of equal privilege to persons possessing perfect equality of civil worth; for in places where the great mass of the population is Roman Catholic, and persons of that persuasion are, for all efficient purposes, excluded from corporate privilege, the necessary result is, that the municipal magistracy belongs entirely to the other religious persuasion; and the dispensation of local justice and the selection of juries being committed to the members of one class exclusively, it is not surprising that such administration of the laws should be regarded with distrust and suspicion by the other and more numerous body. The unpopular character of the municipal bodies is thus, in too many cases, aggravated by their being considered inimical, on the ground of sectarian feelings, to a great majority of the resident population, and they become instrumental to the continuance of the unhappy dissensions which it has so long been the policy of the legislature to allay.'

We proceed to notice the branch of our subject next in importance—the present constitution of the governing bodies of the Irish municipalities.

In some corporations the members of the legislative council are styled aldermen; in others, burgesses, or free burgesses; and in some there are two such classes, the one styled aldermen, the other burgesses. The number of each class is usually definite. In the numerous corporations created by James I. the corporate body was made to consist of a chief officer, twelve or more 'free burgesses,' and 'a commonalty:' but in the chief officer and free burgesses were exclusively vested the election of the principal officers, the filling of vacancies in the body of free burgesses, and the admission of freemen. Similar in effect, though not always with the same simplicity of form, are the constitutions of nearly all the Irish corporations; and the condition of those in which more popular principles are found affords generally but a seeming exception to the prevalent character of the governing bodies. Where a common council has been established to manage the whole or some portion of the corporate affairs, all the members of the superior classes are, with few exceptions, members of that assembly. In several corporations, representatives of the freemen at large are selected to act on their behalf in the common councils; but in few cases are they actually elected by the freemen; in most they are nominated by the superior classes of the corporation, or by the common councils themselves, without any interference whatever on the part of the general constituency. In some corporations the freemen have been altogether excluded from the governing bodies; while in the greater number of those of James I.'s creation the 'free burgesses' have assumed the entire government, to the exclusion of the freemen altogether. The legislative constitutions of Dublin and Cork require more particular notice. The Dublin corporation is the only one in which all the members of the governing body are not elected for life. The common council consists of two bodies sitting apart; the lord mayor and board of aldermen in one chamber, the sheriffs and commons in another. The commons are composed of the 'sheriffs' peers,' being those freemen who have served the office of sheriff, whose number in the council is not to exceed 48, and of 96 members elected triennially by the various guilds of trades of which the corporation is composed: the aldermen are elected by the commons from a certain number of sheriffs' peers returned to them by the lord mayor and board of aldermen. Both sheriffs' peers and aldermen are members of the common council for life. In Cork, a more direct power is vested in the body of freemen. The acts of the common council, which consists of the mayor, recorder, sheriffs, and aldermen, and as many elected burgesses as will make up the number 24, are subject to approval by the court of freemen, in which also the election of its members is vested: but this apparent freedom of choice is in practice entirely controlled by a self-constituted association of a certain class of the freemen, of exclusive political and religious opinions.

A very remarkable feature peculiar to the legislative constitution of the Irish boroughs must here be stated. In England, non-residence has been held, in the majority of cases, to be a necessary disqualification for the legislative functions; but in Ireland, in the year 1747, the political spirit of the time induced the legislature, by statute 21 Geo. II., chap. 10, sec. 8, of the Irish parliament, to dispense with this important condition in all but a very few of the Irish corporations. After reciting that 'many of the towns corporate and boroughs not being cities, which send members to parliament, had been obliged, for want of protestant inhabitants resident in the precincts of said towns corporate and boroughs, to elect into the offices of burgesses and other offices in the said corporations persons who did not inhabit, or could not be resident, in the precincts thereof; that it had been questioned whether persons not inhabitant within said corporation could, within the letter of their respective charters, or some of them, be elected into or act as burgesses within such towns corporate or boroughs; and that it still continued impracticable in most of the said towns corporate and boroughs to find protestant inhabitants who, on account of their circumstances, were fit to be trusted in such offices,' it enacted, 'that no person who had been or should be in all other respects duly elected and admitted into any of the said offices or franchises, in any town corporate or borough not being a city, should be ousted out of any such office or franchise as aforesaid, or be any ways sued, prosecuted, or molested, for or by reason only of his not being an inhabitant of, or resident within, said town corporate or borough at the time of his election, but should hold, exercise, and enjoy such office or franchise as fully and effectually, to all intents and purposes, as if such person or persons was or were inhabitants of, or resident within, such town corporate or borough at the time of election.' The effect of this enactment was to deprive a large proportion of the corporations of a resident governing body. In some cases, a few, very rarely a majority, of the municipal council, were inhabitants of the town; while in others, the whole chartered body of burgesses became composed of non-residents, some of whom attended, *pro formâ*, at elections of the corporate officers and of the parliamentary representatives, or on occasion of the disposing of corporate property, though taking no other part in the local government.

All the evils of an irresponsible monopoly of municipal legislation so lately existing in England, are thus found in Ireland, enhanced by the several circumstances of aggravation already stated. The principle which operates to the exclusion of the great body of Roman Catholics from the corporate constituencies, universally and yet more rigourously excludes them from the close and self-elected governing councils. The control exercised over the admissions to freedom by the most important of them, that of Dublin, notwithstanding its more popular constitution, 'being directed,' say the commissioners, 'by the avowed sectarian feeling of this corporation, has practically rendered its governing body, not the representatives of the general community of the metropolis, but the head of a limited portion of the inhabitants, comparatively few in number, and avowedly exclusive in opinion. In many corporations, too, the anomalous and injurious practice authorized by the act above quoted respecting non-residents, still continues; and the attending members, on occasion of election to corporate offices, are so few, that the validity of the corporate proceedings, and the very existence of the corporation, become subjects of doubt. In addition to so many other fertile sources of perversion, some charters gave a direct control in the corporate elections to the lord of the manor or landed proprietor of the town in which the corporation was established; while in others, the powers given to a small self-elected body become naturally centerd in its most influential member. With few exceptions, the influence once acquired by persons of rank or property in the corporations was easily perpetuated by the powers of self-election in the governing councils, until by degrees the corporate bodies became, as many of them have now long been, composed almost exclusively of the family or immediate dependents and nominees of the individual recognized as the 'patron,' or 'proprietor;' acting solely according to his dictation and for his purposes, in the election of the municipal officers, the administration of the corporate affairs and property, and the returning of the members of parliament for the borough. 'We cannot reconcile with any reasonable principles of municipal government,' say the commissioners, 'the condition to which so great a number of the Irish corporations have been thus reduced, the inhabitants excluded from participation in the election of the corporate authorities, or the management of the corporate affairs, and the whole power of local government vested in a non-resident body, exercising or neglecting it as suits the wishes or convenience of their patron.' The influence thus acquired came to be regarded as absolute property, and transmitted as part of the family inheritance: in some instances it was made the subject of pecuniary purchase; in some, as in the case of Waterford, partitioned, by agreement, between contending interests; and when the legislative union between Great Britain and Ireland deprived many of the corporate towns, or rather their patrons or proprietors, of the power of returning members to parliament, this species of property was formally recognized as a subject of national compensation. The list of towns given by the Irish Commissioners, in which since that period the municipal corporations have become extinct, shows at once the purposes to which their patrons looked in preserving their nominal constitution, and its inefficiency to secure the primary objects of a municipal establishment. Many of those which were then allowed the power of returning a member to the imperial parliament, still retain a municipal corporation under the same system of patronage; which also prevails in several of the other subsisting corporations, in which the administration of property and the emoluments of office are important enough, in profit or influence, to make their retention an object of consideration.

As the endeavours of the government and legislature of the United Kingdom to assimilate the municipal system of Ireland to the reformed practice of England, have hitherto been totally defeated by the persevering opposition of the hereditary branch of that legislature, we shall here enter into no detail of the particular schemes for its amelioration proposed and carried in the representative chamber of the imperial parliament. We have only to remark the glaring anomaly exhibited in this perpetuation of the old corporation system in that very portion of the empire, and that alone, wherein municipal institutions have been perverted in the degree the most shocking to common sense, the most wounding to liberal feeling, and the most pernicious to the peace and welfare of the several communities for whose good the institutions in question were ostensibly framed. We know, indeed, that the very parties who have been mainly instrumental to this perpetuation, give up the existing system as wholly indefensible; but what are we to think of their proposal to remedy the evil by depriving so important an integral part of the kingdom of all municipal institutions whatsoever? We have here to do with the subject only so far as historical fact and political science are concerned; and in this view it is that we are called upon to point out the grave inconsistency of such as, while professing the most ardent desire to maintain the parliamentary union of the two islands, would place the English beyond St. George's Channel out of the pale of that local organization which has ever been a vital prin ciple of the English commonwealth, and out of which, as we have shown elsewhere, the parliamentary representation itself has chiefly risen. We say, the English beyond St. George's Channel; for they who, at this day, affect to treat the inhabitants of Ireland as aliens, seem to lose sight of one or two very important considerations. Not only did the violent introduction of the Anglican Reformation into Ireland (as we have indicated in the early part of this article) permanently substitute the division of creeds for that of races, as the grand basis of political distinctions, but since that period, also, the general progress of civilization has given the social habits, the manners, the language, and the literature of England, such universal predominance in 'the sister island,' that it is one of the grossest of fallacies to talk of the 'the Irish,' at this day, in the same sense and spirit as a good Englishman of the days of Henry II., or even of James I., might have done. A thorough identification of language and literary ideas, in particular, is surely the process of all others most importantly conducive to that perfect social amalgamation upon which political assimilation should naturally attend.

CORPULENCE. [Obesity.]

CORPUS CHRISTI or BENE'T COLLEGE, Cambridge, was founded about the year 1351. The founders were the brethren of two guilds, termed the guilds of Corpus Christi and the Virgin Mary, by which joint name the college was originally called; but soon after its foundation it acquired the name of Bene't College (by which it is still often distinguished) from the adjoining church of St. Benedict, the advowson of which was purchased for the college of Sir John Argentine and Sir John Maltravers. Henry, duke of Lancaster, who was alderman of the above-mentioned guilds, procured from the king a charter for ratifying the endowment of the college. The number of fellowships varied originally according to the revenues of the college; it is now twelve, two of which are appropriated to the city of Norwich, and four to the county of Norfolk; the remainder are open. Archbishop Parker, when master, by his exertions in supporting the rights of the college, and improving their estates, enabled them to add two fellowships to the number then existing (which was eight), and gave certain rent-charges to the college for the purpose of founding two other fellowships and eleven scholarships. The archbishop was a great benefactor to the college also by donations of money, plate, books, and a very valuable collection of manuscripts. One of the fellowships and a scholarship were founded by Elizabeth, duchess of Norfolk, wife of Thomas Mowbray, the first duke. There are sixty-two scholarships and exhibitions belonging to this society: eleven of these were founded as before mentioned by archbishop Parker, mostly for natives of Norfolk; six by Sir Nicholas Bacon, the preference to be given to students from Redgrave school; and twelve by bishop Mawson, to be given to such students as shall excel in the annual examinations. The stipends of these scholarships and exhibitions are various. The greater part are under 20*l*. per annum. There are eleven benefices in the patronage of this college. The number of members upon the boards at the close of 1835 was two hundred and fifteen.

The valuable manuscript library left by archbishop Parker to this college is under the following particular restrictions. Every year on the 6th of August, it is to be visited by the masters or locum-tenentes of Trinity Hall and Caius College, with two scholars on archbishop Parker's foundation, and if, on examination of the library, twenty-five books are missing, or cannot be found within six months, the whole collection devolves to Caius. In that case the master or locum-tenentes of Trinity Hall and Corpus Christi College, with two scholars on the same foundation, are the visitors; and if Caius College be guilty of the like neglect, the books are to be delivered up to Trinity Hall: then the master or locum-tenentes of Caius and Corpus-Christi, with two such scholars, become the inspectors; and in case of default on the part of Trinity Hall, the whole collection reverts back to its former order. Two catalogues of this library have been published, one in 1722, and the other by the Rev. James Nasmith, 4to., Cambridge, 1777.

This college, situated in Trumpington Street, formerly consisted principally of one court, and an antient chapel built in 1578 at the expense of Sir Nicholas Bacon. The college however, being very antient, and falling rapidly into decay, was renewed in the Gothic style from the designs of William Wilkins, Esq., the old court being suffered still to remain: the first stone of the new building was laid in 1823. The great west front in Trumpington Street is 222 feet in length. In the centre is an entrance gateway flanked by two towers leading into a quadrangle, 158 feet long by 129 broad, containing the chapel, library, hall, master's lodge, and forty-seven sets of apartments for the fellows and students.

Among the eminent persons educated in this college, were Hugh Latimer, bishop of Worcester, the archbishops Parker, Tennison, and Herring, Sir Nicholas Bacon, lord-keeper in the reign of queen Elizabeth, Thomas Tusser, Fletcher, the dramatic poet, Dr. John Spencer, author of the work 'De Legibus Hebræorum,' Dr. William Stukely, Robert Masters, the historian of the college, and Richard Gough, the antiquary.

The present master of this college is the Rev. John Lamb, D.D., elected in 1822. The visitors are the vice-chancellor of the university, and two senior doctors in divinity: in extraordinary cases, the king.

(Lysons' *Magna Britannia*, Cambridgesh., p. 107—109; Masters's *History of the College, with Additions*, by John Lamb, D.D., 4to., Camb. 1831; *Camb. Univ. Calendar* for 1836.)

CORPUS CHRISTI COLLEGE, Oxford, was founded in 1516, by Richard Fox, bishop of Winchester. The foundation was preceded two or three years before by the purchase of certain pieces of land in Oxford, belonging to Merton College, the nunnery of Godstow, and the priory of St. Frideswide; and the first design was to found a college for a warden and a certain number of monks and secular scholars belonging to the Priory of St. Swithin in Winchester, in the manner of Canterbury and Durham Colleges. The plan however was changed by the advice of Hugh Oldham, bishop of Exeter, who is said to have foreseen the fall of the monasteries, and whose arguments appear to have induced Fox to place his new foundation upon the general footing of the other colleges of the university. Accordingly, by license of Henry VIII., dated November 26, 1516, he obtained leave to found a college for the sciences of divinity, philosophy, and arts, for a president and thirty scholars, graduate and not graduate, more or less, according to the revenues of the society· the new college to be endowed with 350*l*. yearly. The statutes, dated February 13, 1527, show that the founder, in some degree, again changed his plan.

The society at present consists of a president, twenty fellows, twenty scholars, and two chaplains. The fellows are elected from the scholars, and the latter from the following dioceses and counties, viz.—four from the diocese of Winchester, of which two are to be of the county of Hants, and two of Surrey: two from the diocese of Bath and Wells; two from the diocese of Exeter; two from Lincolnshire; two from Gloucestershire; one from Wiltshire; two from Kent; one from Lancashire; one from Bedfordshire; one from Oxfordshire; one from the diocese of Durham; and one upon Frost's foundation. There are, besides, four exhibitioners not confined to counties.

What conferred an almost immediate superiority of reputation on this society, was the appointment in it of two lectures for Greek and Latin; a knowledge of the classics not having been considered, up to that time, as an essential branch of academic study. Ludovicus Vives, Crucher the mathematician, Thomas Lupset, Richard Pace, and other men of established reputation, were invited by the founder to his new college. Erasmus was then resident in Oxford, and assisted with his advice.

The principal benefactor to this college, in addition to the provision made by the founder, was Hugh Oldham, bishop of Exeter, already mentioned, who contributed six thousand marks besides lands. Other benefactors are enumerated in the histories of Oxford, of whom Dr. Turner, who had been president from 1688 to 1714, was one of the most liberal. Arthur Parsons, M.D., about the close of the seventeenth century, gave 3000*l*. for the purchase of advowsons. Cuthbert Ellison, who died in 1719, and lies buried in the chapel, gave 500*l*. for the same purpose, and was also a contributor to the library.

The main buildings of this college consist of the quadrangle, erected by the founder, including the hall, chapel, and library. An additional building, looking to Christ Church walks, was erected at the expense of Dr. Turner, just mentioned, in 1706. The altar-piece in the chapel is a painting of the 'Adoration,' by Rubens, presented to the college in 1804, by the late Sir Richard Worsley; it came from the collection of the Prince of Condé, at Chantilly.

The total number of benefices in the gift of this society, is twenty-two. The number of members on the books on December 31, 1835, was one hundred and thirty. The present president is Tho. Edw. Bridges, D.D., elected in 1823. The visitor is the bishop of Winchester.

Among the eminent and learned men who received their education in this college were Jewel, bishop of Salisbury, Nicholas Udall, Richard Hooker, Daniel Featley, Dr. Richard Pococke bishop of Meath, the learned orientalist Edmund Chishull, Fiddes the biographer of Wolsey, and Anstis the herald.

(Wood's *Hist. of the Coll. and Halls of Oxf.* by Gutch; Chalmer's *Hist. of the Colleges and Halls*, 8vo. Oxf., 1810; *Oxford Univ. Calendar*, 1836.)

CORPUS JURIS CIVILIS. The term corpus juris (literally a body of law) was introduced in the middle ages to signify a book which comprehends several collections of law. There are two principal collections to which that appellation is given, the Corpus Juris Civilis and the Corpus Juris Canonici. [CANON LAW.] The term Corpus Juris Civilis designates the book in which the different parts of the legislation of the Emperor Justinian are collected, and which, being considered as one whole, contains the main body of the Civil or Roman law. According to this definition, the Corpus Juris Civilis consists of the compilations of the Codex, Pandects or Digests, Institutes, and Novels, which were made under the direction of the Emperor Justinian.

Justinian himself, regarding each part of his legislation as a separate collection only made for the purpose of completing former compilations, never thought of giving a common title to them all. Each part had its separate and appropriate name; for instance, the Codex was so called because it was the book in which the Roman emperors' Constitutions were collected; the Institutes were so called because they contained the first principles and rules of the law. In the middle ages, when the study of the Roman law began to flourish in the universities of Italy, the Jurists began to consider Justinian's separate collections as one entire legislation, to which a general title would be appropriate. Savigny, in his history of the Roman law in the middle ages, asserts that the term Corpus Juris Civilis was used in the twelfth century. However, Russardus, professor in Bourges (which, in the sixteenth century, was one of the most celebrated French universities for jurisprudence), who first edited the collections of Justinian under a common title, at Lyon, in the year 1561, chose only the term Jus Civile for that purpose; and Dionysius Gothofredus, likewise a French jurist of Paris, is commonly considered as the first who, in his edition in the year 1583, at Lyon, adopted the term Corpus Juris Civilis as a general title for the collections of Justinian. From that time this title has always been in use.

The Corpus Juris Civilis, as it is now composed, contains: 1. The Collections of the Emperor Justinian, viz., the Institutes, in 4 books; the Pandects or Digests, in 50 books; the Codex, in 12 books, together with the Authentica, *i. e.* short excerpts from the Novels, which are added to many passages of the Codex for the purpose of explaining or completing them; and the Novels, the number of which is 168. 2. An arbitrary appendix, joined to the Corpus Juris by different editors since the time of Russardus, viz., *a.* several Constitutions of the Emperor Justinian and his two successors Justinian II. and Tiberius II., called Justinian's 13 edicts, which were first received into the Corpus Juris by Russardus; *b.* several other Constitutions of the same three emperors, which were first added by Contius, in his edition of 1571; *c.* 114 Constitutions of the Emperor Leo, the philosopher, given by him for the purpose of amending and correcting Justinian's legislation, together with a Constitution of the Emperor Zeno, likewise first added by Contius in his edition; *d.* a series of Constitutions of the successors of the Emperor Justinian from the seventh to the fourteenth century, first added to the Corpus Juris in the edition of Charondas of 1575; *e.* a series of 84 (or 85 according to the older division) ecclesiastical Canons, called Canones Sanctorum et Reverendorum Apostolorum, first added to the Corpus Juris by Haloander, as to the origin of which there are different opinions, but they are probably a private collection of decrees of councils and synods before the synod of NICÆA, A.D. 325; *f.* the Libri Feudorum, *i. e.*, the books which contain the usages and customs of the feudal system, and which were joined to the Corpus Juris by the Glossators; *g.* and, last of all, several Constitutions of the Emperor Frederic II. In several editions we find other appendages besides those here noticed.

The manuscripts of the Corpus Juris Civilis are numerous, but nearly all of them contain only a part of Justinian's legislation: manuscripts which contain the whole body of law are very rare. The best MS. of the latter is at Copenhagen. Of MSS. before the time of the Glossators (professors of law, in the twelfth and thirteenth centuries, in the universities of Italy, especially in Bologna, who taught the Roman law, and explained the different parts of the Corpus Juris), we have only one of the Pandects, the celebrated Florentine manuscript, which was first at Pisa, but was brought in 1406 to Florence; it probably belongs to the sixth or seventh cenury, and some even suppose that it may be the original copy of the Pandects which was sent by Justinian to the Western Empire. The other manuscripts are of the twelfth, thirteenth, and fourteenth centuries, and contain the versio vulgata, or text as settled by the Glossators according to older manuscripts. In Munich and Paris there are valuable manuscripts of the versio vulgata of the Codex. As to the manuscripts, see Beck, *Indicis Codicum et Editionum Juris Justinianei Prodromus*, Lips., 1823. As to the manuscripts in England, there is a valuable notice in the 5th vol. of the *German Magazine of Historical Jurisprudence*.

There are numerous editions of the Corpus Juris: it was printed very soon after the invention of the art, but at first only separate parts were published. The oldest edition that we know of is that of the Institutes, by Peter Schœffer, in Mentz, of the year 1468. There is a copy of this edition on vellum in the King's Library, British Museum. It has a small illumination of a presumed portrait of Justinian in the title-page. The larger capital letters throughout the book are illuminated, and some of them with gold. Till the year 1476 all the parts of the Corpus were printed separately. The first edition, which contained the whole, is that by Honate, at Milan, of the years 1482 and 1483, but still not under a general title, which, as already mentioned, was first used by Russardus. Till the year 1518 all the editions were printed with the glosses, but after that date the glosses were commonly omitted. The last edition with glosses is of the year 1627. For a complete list of the editions, see Beck's *Index*. The best known edition of the Corpus Juris is that of Dionysius Gothofredus. He edited the Corpus Juris several times, with notes, 1583, Lyon, without notes, Lugd., 1589. His editions are often counterfeited; the best is Francfort on the Mayn, 1663.

CORPUSCULAR THEORY. [MOLECULAR THEORY.]

CORRECTING PLATE. [NAVIGATION.]

CORRECTION, HOUSES OF. [REFORMATION, HOUSES OF.]

CORRE'GGIO, ANTO'NIO ALLE'GRI, or, as he has been known to write it, **LIE'TO**, one of the first of painters, was surnamed Correggio from the place of his birth, which probably took place towards the end of the year 1493, or early in 1494. Correggio's life is involved in the most impenetrable obscurity. The only authentic records which exist are certain registered documents, public and private, which are yet preserved; but they serve only to throw a very feeble light upon his domestic life, and all our knowledge of it remains of a negative character. Some of his biographers, at the head of whom is Vasari, describe him as of humble origin, indigent, and penurious in his way of living. But the documents existing, some of which relate to the transfer of estates in his own family, and the prices paid to himself for his pictures, utterly disprove such neediness. On the other hand the attempt of Mengs and his copyist Ratti to draw his descent from a noble family of Correggio, once feudal lords of Campagnola and its castle in the Corregese, seems quite without historical foundation. The Allegri family, from which Antonio descended, appears to have been a decent family of Correggio; but the only proof of relationship between that and the other family is the coincidence of name, a most uncertain one, though it cannot be entirely overlooked. The conveyance and bequest of considerable property, such as moderately large sums of money, houses, and small portions of land, are too frequent among Antonio's immediate relations, to leave any doubt of his having been at least in easy circumstances.

Among other legacies, for instance, Pelegrino, the father of Antonio, who survived his son, left 250 gold crowns to his granddaughter, making his grandson Pomponio his residuary legatee. The fact of Correggio's making liberal use of the most expensive colours is a good collateral proof of his easy circumstances: ultra-marine, which in Ratti's time was worth from forty to fifty crowns per ounce, is unsparingly employed in his paintings. But by itself this fact would prove nothing, since the colour might possibly, as Tiraboschi observes, have been charged to those who gave him commissions.

It is quite uncertain who was Correggio's first instructor. Francesco Bianchi has been named his master; and Pungileoni, one of his most recent biographers, affirms that a certain Lombardi, who afterwards abandoned painting to practise as a physician, was his first teacher. It seems however most likely that his uncle Lorenzo first taught him the elements of his art, and that he afterwards studied under the sons of Mantegna. Mantegna himself has been supposed to be his first master; and the fact of his having died in 1506, when Correggio was barely twelve years old, does not render it impossible, although very improbable. In Mantegna's works however, we may recognise the germ of that sweet and graceful style which Correggio carried to perfection. That he ever went to Rome is far from probable, since a continued series of documents prove him to have been habitually residing in Correggio at the time when some writers have supposed he visited Rome. If he ever went at all, of which there is no better proof than surmise and tradition, it must have been for a mere visit. The mastery with which he treats classical subjects, has given rise to the supposition that he received a liberal education, and there is no proof to the contrary. It is most certain, also, that his works display a considerable knowledge of architecture; but that he practised that art, or sculpture, as some of his biographers have asserted, is entirely without proof.

Correggio was married, and had a son and three daughters. The supposition that he married a second time probably arose from a mistake in a certain register, in which his wife's Christian name is misstated; for his first wife is known to have been alive after the period assigned to his second marriage. No one ever pretended to know the surname of the second wife; but a long story was invented, showing how she was very beautiful, but of low origin, and that therefore he was ashamed of his marriage; a tale evidently framed to meet the conjecture suggested by the mistake alluded to. He died on the 5th March, 1534, and was buried in the church of St. Francis at Correggio.

It is as uncertain as anything else in his life, whether Correggio formed his more perfect style entirely from his own natural taste, with no greater model than Mantegna, or whether he had access to the works of the great painters of his time, and the antique, and received his best lessons from them. It appears probable that a mean between the two positions is the truth; that casts of the antient sculptures, and an occasional view of some of the works of the great painters, besides copies, could be obtained in his native country; for the city of Correggio was not without a taste for the arts, and had some tolerably good painters before Correggio. At all events he formed a style completely his own, remarkable for masterly *chiaroscuro*, exquisite colouring, and the most graceful design. Less varied and decided in his outline than the painters of the Roman and Florentine schools, he is more anxious to dispose his lines in easy flowing curves than to display knowledge of anatomy or powerful drawing. Nevertheless his forms are sufficiently correct, and the consummate skill shown in his endless foreshortenings proves that his smoother style of drawing was dictated by no want of study or deficiency of ability. While Titian's colouring is bolder, more varied, and more powerful than Correggio's, it is not so full of beauty, and a certain mild and rich luxuriousness. There is the same difference between the two that there is between a bed of glowing flowers and a pulpy cluster of grapes laughing from under the vine-leaves. More studied in his use of light and shade than any of his brother painters, he gives to his pictures an air of space which mocks the limits of the frame; a depth and unity, the force of which Rembrandt alone has exceeded, and no one else approached: but the Flemish painter's sun never shines upon forms like the Italian's,—it is mostly a 'god kissing carrion.' The expression which Correggio infuses into the lovely creatures of his pencil is in harmony with the grace of his drawing, the pure sweet colouring, and the concordant tone of the picture. Avoiding harsh and unpleasant subjects, and delighting in the play of tender and voluptuous emotions, his mothers fondle their offspring, his children frolic and smile, his lovers pant and sigh, with all the extasy of unreproved nature. Annibal Caracci bursts out with a desire to join his infants in their sports, so real and living does he find them. If his beings are of a less mighty mould than Michel Angelo's, his colour less powerful in its tints than Titian's, and his expression less passionate than the Venetian's, and his design less perfect and less exalted than Raphael's, no artist has equalled him in gentleness and sweetness, and none calls forth the affections of the spectator in a more lively manner.

Correggio's pictures are not so numerous as those of some painters; but they are sufficiently spread over Europe for his style and fame to be universally recognised. The cupola of the cathedral at Parma is painted with an 'Assumption of the Virgin,' of which the numerous beauties, the masterly foreshortening, the grace, the colour, and the design, so excited Titian's admiration, that he is reported to have said, 'If I were not Titian, I would be Correggio.' In the gallery at Dresden are the 'Notte,' or rather dawn—a grand picture on the subject of the Nativity, and a masterpiece of chiaroscuro—and a little cabinet picture, the 'Penitent Magdalen,' in which the saint is represented lying on the ground reading. A blue mantle envelopes the form; the head, shoulders, bosom, and feet are bare: a shady nook enshrines the saint. Her brow rests upon one hand, and a tender melancholy trembles on her lips. The soft features, the dainty bosom, the gentle arms are of the rarest beauty. It is the most perfect woman ever painted. In the National Gallery in London are two of his best pictures, the 'Education of Cupid' (a duplicate) and an 'Ecce Homo.' The Madonna in the latter is painfully true to suffering nature, but redeemed by his usual beauty of form and expression. Two of his most celebrated pictures were destroyed, it has been said, by order of the Regent Duke of Orleans, for the too great freedom of the design—the 'Danaë' and the 'Io,'—a strange story for a man of his character. The former was pieced together again by Coypel; of the latter a duplicate still exists.

Correggio had many good pupils; among whom may be reckoned his son, who painted a fresco in the cathedral at Parma which has been much commended. He abandoned painting, however, before he died. Parmigiano may be reckoned among the followers and imitators of Correggio, though not among his pupils. The school of Bologna aimed at uniting his grace and sweetness to the drawing of the Romans and the colour of the Venetians; yet after all, Annibal Caracci, the chief of the eclectic school, seems inclined to reckon Correggio the first among painters.

It has been observed that all Correggio's pupils and immediate followers fell into affectation. This was a natural consequence of imitating a style which originated in a highly sensitive genius, constantly moved by intense and unrestrained emotions. Correggio himself has been accused of affectation; but the reproach has arisen in a cold misappreciation of his warm-hearted disposition.

(Tiraboschi; see also Mengs, Ratti, Lanzi, and *Sketches of the Lives of Correggio and Parmigiano.)*

CORRE'ZE, an inland department of France, deriving its name from the river Corrèze, which falls into the Vezère, a tributary of the great river Dordogne. The department is of irregular form, having it greatest length from north-east to south-west seventy miles, and its greatest breadth, at right-angles to the length, forty-eight to fifty miles. Its superficial extent is about 2088 square miles: its population 294,834, or 141 to a square mile. It is bounded on the north by the department of Creuse, on the north-east by that of Puy de Dôme, on the south-east by that of Cantal, on the south by that of Lot, on the south-west by that of Dordogne, and on the north-west by that of Haute Vienne. It is comprehended between 45° 38′ and 46° 26′ N. lat., and 1° 10′ and 2° 32′ E. long. Its capital Tulle is about 250 miles in a straight line south by west of Paris, or about 292 by the road through Orléans, Limoges, and Uzerche.

This department does not contain any lofty elevations: the northern and north-western parts are traversed by the heights which run from the central group of Auvergne to the mouth of the Loire. The slope of the surface, as indicated by the water shed, is to the south-west, in which direction the principal streams flow. The chief rivers are, the Dordogne, which passes by the town of Bort, and bounds the department on the south-east, until its junction with the river Auze; after which the Dordogne quits the boundary, and flows by Argental through the interior of the department, which it quits a little below the town of Beaulieu: the Vezère, which rises in the northern part of the department, and flows south-west past Treignac, Uzerche, and Alassac; its junction with the Dordogne is after it quits the department: the Corrèze, which rises not far from the source of the Vezère, and flows south-west past the towns of Corrèze, Tulle, and Brive, a little below which it falls into the Vezère. These are the principal rivers, but not one of them is navigable within the confines of the department. Of the other streams an enumeration will suffice: the Soudenne, Bradascou, and Zoure, fall successively into the Vezère on the right bank; the Montanne falls into the Corrèze on the left bank; the Chavanoux (which forms for a short distance the eastern boundary of the department), the Diège, the Triousssone, the Luzège, the Doustre, the Souvigne, and the Mounion, fall into the Dordogne on the right bank (but the junction of the latter is not within the department); the Marone and the Cère on the left: the Cère forms the boundary of the department on the south side for a short distance; its junction with the Dordogne is beyond the limits of this department. The Haute Vezère, a tributary of the Isle, one of the principal feeders of the Dordogne, has its source in this department; but the chief part of its course is beyond it. The high road from Paris by Limoges to Cahors, Montauban, and Toulouse, passes through Uzerche, Donzenac, and Brive, in the western part of this department: a road from Clermont to Perigueux and Bordeaux crosses it from north-east to south-west, intersecting the former road at Brive. There are other roads from Uzerche to Tulle, and from Argentat on the Dordogne to Aurillac, in the department of Cantal: another road just passes through the south-east extremity of the department at Bort on the Dordogne. The other roads are merely cross roads (*routes départementales et vicinales*). Perhaps scarcely any other department is so wretchedly furnished with the means of intercourse and conveyance.

The soil of this department is on the whole the least fertile of any of the French departments. In the hilly districts of the north barren heaths predominate: the population is thin, and the aspect of the country wild. The lower grounds are better cultivated, but the produce in grain, chiefly barley, rye, and buck-wheat, would not suffice to maintain the population, were it not for the chestnut, which grows abundantly. A great part of the soil is occupied in pasturage, and in the spring many thousand head of cattle, which have been fattening during the winter, are sent to Paris to market. Bordeaux and Bayonne are furnished with salt pork for shipping; and walnut oil is sent into many of the departments. Some pretty good wine is produced; and horses and mules are reared. The peasantry live in a very wretched condition, as the following description quoted by Malte Brun shows:—'In his dwelling the peasant of the department (of Corrèze) is wretchedly off, and has much to complain of: his dwelling presents to view unwholesomeness, combined with dirt and misery. The greater part of the houses leaning against a moist soil, and on a level below that of the surrounding soil, are receptacles for the damp which trickles from the walls or rises from the ground. Placed without judgment, and having the apertures arranged without propriety, their houses have to sustain the cold moist winds of winter, and the concentrated and destructive heats of summer. The smoke of their fire-places, unable to escape by their ill-built chimneys, thickens in the room, and the air, charged with this irritating vapour, painfully affects the eyes: chronic ophthalmia of an obstinate character ensues, and often blindness. Add to this painful statement, that a filthy and disgusting animal, the pig, is kept close to the house, often in it, and you will have a tolerably correct idea of the situation of the peasant under his own roof.'

The department is divided into the three sub-prefectures or arrondissements, of Ussel in the north-east, population (in 1832) 57,278; Tulle in the centre, population 126,532; and Brives in the south-west, population 111,024. The towns are Tulle, the capital, on the Corrèze, population 6501 for the town, or 8689 for the whole commune; Brive or Brives, also on the Corrèze, population 5776 for the town, or 8031 for the whole commune [BRIVE, TULLE]; Ussel, Uzerche, Beaulieu, Argentat, Meymac, Donzenac, Treiguac, Bort, Turenne, Alassac, Chamboulive, Lubersac, L'Arche, Corrèze, Meissac, Egletons, Neuvie, besides several smaller towns or bourgs. The department was divided at the publication of the *Dictionnaire Universel de la France*, by Prudhomme (1804), into twenty-nine cantons, or districts of a justice of peace, and 295 communes, or parishes. It is in the diocese of Tulle, and under the jurisdiction of the cour-royale of Limoges.

Ussel, the capital of a sub-prefecture, is on the rivers Sarsone and Diège above their junction. The road from Clermont to Tulle, Brive, and Perigueux, passes through this town. Some antiquities discovered by digging in a field in the neighbourhood indicate that Ussel is built on the site of an antient city, to which Malte Brun assigns Usellis as the probable name. No such place is however mentioned by D'Anville. There is a bridge over the Sarsone, distinguished by the boldness and elegance of its construction. The inhabitants amounted (1832) to 2813 for the town, or 3963 for the whole commune. They had formerly the reputation of being skilled in the manufacture of paste diamonds. The present trade consists in hides, hemp, linen cloth, and wax: some woollen stuffs are made. Granite of different kinds is found in the neighbourhood.

Uzerche is at the junction of the roads from Guéret (department of Creuse) and Tulle with the great road from Paris to Toulouse: it is seventeen miles from Tulle. It is a small antient town, and very picturesque. It is on the slope of a hill, at the foot of which flows the Vezère. The streets are not well laid out, but the houses are many of them turretted and covered with slates, attesting the importance of their original proprietors. It was a proverb formerly, that the proprietor of a house in Uzerche had his country seat in Limousin. The church, dedicated to St. Pierre (Peter), was formerly attached to a monastery established in the fifth century, to which it is likely the town owed its importance, if not its origin. The present church was built at the beginning of the fourteenth century, in place of the older one destroyed by fire. Pope Clement V., who rebuilt it, was interred here, but his tomb was destroyed by the Protestants in 1568. There were before the revolution three other parish churches. The inhabitants in 1832 were 2229 for the town, or 3214 for the whole commune. There is a glass-house at Uzerche. A few miles from Uzerche is Pompadour, the castle of which was given by Louis XV. to his mistress, the Marchioness of Pompadour.

Beaulieu is on the right bank of the river Dordogne, just above where it quits the department. This town owes its origin to a Benedictine monastery founded in the ninth century by Rodolph or Raoul de Turenne, Archbishop of Bourges. There were several religious establishments in the town before the revolution: there is at present an hospice, or almshouse. The population in 1832 was 2154 for the town, or 2415 for the whole commune.

Argentat is on the Dordogne, considerably above Beaulieu. It is in the neighbourhood of coal and lead mines, and the surrounding country produces tolerable wine. The population in 1832 was 1880 for the town, or 3121 for the whole commune.

Meymac is in the hilly country, in the north of the department, near Ussel. The population in 1832 was 1850 for the town, or 3130 for the whole commune. There is coal in the neighbourhood, but we are not aware that it is worked. *Donzenac* is on the high road from Paris to Toulouse, between Uzerche and Brive. There are slate quarries near. Population in 1832, 1820 for the town, or 3219 for the whole commune. *Treignac* is in the northern part of the department, on the Vezère, in the upper part of its course. Population in 1832, 1733 for the town, 2704 for the whole commune. *Bort* on the Dordogne, in the eastern part of the department, was the birth-place of Marmontel. It is in a pleasant situation, and near it is the picturesque fall of the little river Rue, called *Le Saut de la Saule*. Population in 1832, 1705 for the town, 2291 for the whole commune. *Turenne*, a few miles south-east of Brive, has a ruined castle on the summit of a steep rock. There is a lofty tower of this castle 100 feet high yet standing, which is popularly called Cæsar's tower. Turenne has a population of 1600 persons: it was the capital of a viscounty held by the dukes of Bouillon, until it was sold to Louis XV. in 1738. *Alassac* is on the Vezère; *Chamboulive* is between Treiguac and Uzerche; *Lubersac* on the

Haute (Upper) Vezère; L'Arche on the Vezère; Corrèze on the Corrèze; *Meissac* between Turenne and Beaulieu; and *Egletons* and *Neuvie* in the country between Tulle and Ussel. We have no late return of the population of these towns, but they may be taken as under 1500: the population of the communes of Alassac, Chamboulive, and Lubersac, was (in 1832) 4049, 3036, and 3502 respectively. Lubersac was the birth-place of General Souham, an officer of considerable note under Napoleon

The department of Corrèze sends three members to the Chamber of Deputies. (Malte Brun, Balbi; Prudhomme, *Dict. Universelle de la France.*)

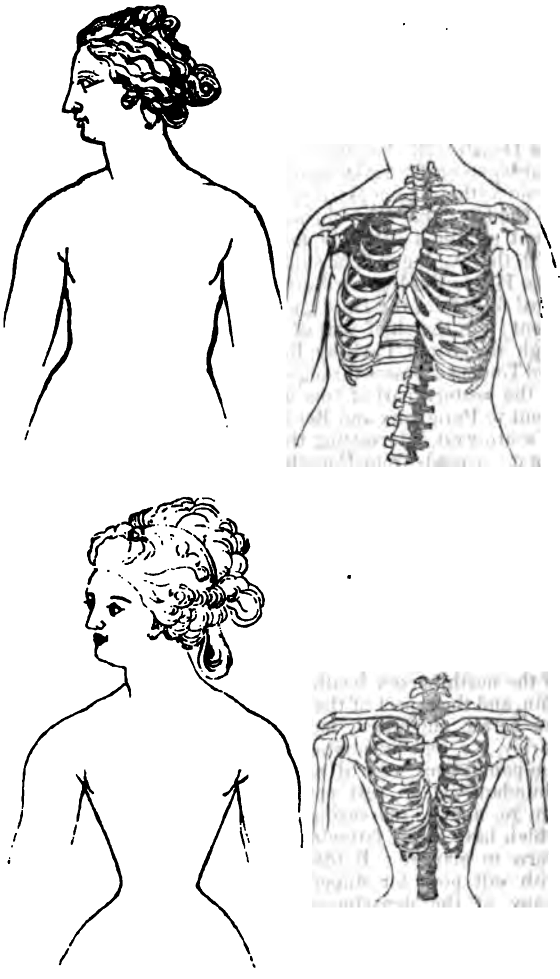
CORRIB, LOCH, a large lake in the county of Galway, the second in extent in Ireland, 14 feet above the sea at Galway, from which it is distant 3 miles. It is 22 miles in length, and varies from 2 to 12 in breadth. It is separated by a narrow isthmus, through which there is a subterraneous channel, from Loch Mask and Loch Carra, the first 50 and the second 64 feet above the level of the sea. The united area of these three lakes presents a surface of 64,000 acres, and has a coast-line of nearly 200 miles. They are at present navigable throughout for boats drawing four feet of water, but could easily be rendered navigable for vessels of a much larger draught. Loch Corrib alone has 40 miles of navigation, covers 30,000 acres, and has upwards of 1000 acres of excellent land on its islands. (*Report on Connaught Lakes.*)

CORRIDOR, from the Italian coridore, signifies a gallery or passage-way leading to apartments independent of each other. In all large buildings containing numerous apartments corridors are necessary, either closed or open. The corridor round the great cortile or open court of the Cancellaria at Rome, designed by Bramante, consists of an open gallery supported by columns.

CORRUPTION OF BLOOD. [ATTAINDER.]

CORSET, an article of dress for compressing, under the pretext of supporting, the chest and waist, worn chiefly by females, but also sometimes by effeminate individuals of the other sex. It consists of cloth made to surround the body, stiffened by whalebone or other means, and tightened by a lace. It seems a remnant of the old practice of enveloping the whole frame in swaddling bands; a practice which has been generally discarded in rearing male children, but which still lingers as a part of the attire of female children, in defiance of nature, reason, and experience. The advantages arising from its use are trifling, if any; the disadvantages manifold and serious. Nature has formed the chest (in which are lodged the lungs for respiration and the heart for circulation, two out of three of the vital functions) in the shape of a truncated cone, the base of which is capable of being alternately widened and contracted during inspiration and expiration. The wonderful and perfect mechanism for carrying on respiration cannot come into full play if any compression be applied to the lower part of the chest, which is however the part commonly selected, from yielding most easily, to endure the hurtful restraint of tight lacing. The chest never being allowed to expand to the extent which is necessary, the defect in each respiration is attempted to be compensated for by their greater frequency, and thus a hurried circulation is produced. The heart is also hindered in its action, and an imperfectly aërated blood is circulated by it, by which nutrition is inadequately accomplished: unhealthy secretions are likewise formed out of this vitiated blood, and prove a further source of disease. The muscles of the chest, spine, and abdomen, being deprived of their proper exercise, become attenuated and feeble, and incapable of giving due support, whence result distortions of the spine and chest, and much of that constipation which so frequently afflicts females. The viscera of the abdomen, especially the liver, suffer greatly, both by displacement—being forced downwards—and by being actually indented by the edges of the compressed ribs. 'In examining,' says Dr. Hodgkin, whose connexion with Guy's Hospital gives him extensive opportunities of observation, 'the bodies of the dead, I have frequently found the lower ribs of females greatly compressed and deformed. I have repeatedly seen the liver greatly misshapened by the unnatural pressure to which it had been subjected, and the diaphragm or midriff very much displaced.' The diseases which result from this interference with nature are various; and though they do not all occur in every female who adopts this mischievous practice, yet on inquiry too many may be traced to this source. Of these diseases consumption is the most frequent and fatal. Nor is the real object of all this painful and irksome compression in any instance attained. The figure of the female bust may be altered by it, but not improved. Sculptors, who are the closest observers of nature, and who transfer to their statues every beauty presented to their eye, have invariably given ample dimensions to the lower part of the chest. The more therefore any female, not of unnatural proportions, compresses her waist, the more does she depart from resemblance to 'the statue which enchants the world.'

The accompanying figures, taken from Professor Soemmering, 'On the Effects of Stays,' will illustrate this.



(See *Penny Magazine*, vol. ii. p. 78.)

CORSICA or **CORSE**, an island in the Mediterranean, situated between the island of Sardinia and the Genoese coast. It is now incorporated with France, and forms one of the departments of that monarchy. It is of irregular form, having its greatest length in a direction very nearly north and south. The eastern coast has no remarkable indentations throughout its extent (which, following the coast line, is about 130 miles), except the small gulfs or harbours of Porto Vecchio and Santa Maria, and the étang or lake of Biguglia; but the western side of the island is indented by many deep bays, as those of St. Florent or Fiorenzo, Calvi, Porto, Sagone, Ajaccio, and Valinco. The island narrows towards its northern and southern extremities: in the north part it forms the promontory of Cape Corso beyond the towns of St. Florent and Bastia. The greatest length of the island is 116 miles; the greatest breadth about 51; and the area 3380 square miles.* There were, in 1831, 197,967 inhabitants, of whom 99,839 were males. It lies between 41° 20′ and 43° 0′ N. lat. and 8° 32 and 9° 33′ E. long. There are round Corsica several small islands, as Girajlia and Finocchiarolo on the north; Capraja on the north-east; l'île Rousse or Isola Rossa, Gargalo, and les Iles Sanguinaires (Bloody Islands), on the west; les Iles Cervicales and du Taureau (Bull Island) on the east; and Perdutto, Cavallo, Lavessi, Santa Maria, Berettini, and Budella, in the narrow straits of Bonifacio, which separate Corsica on the south from the island of Sardinia. There are some other islands, the names of which are not given in Brué's 'Map of France,' from which we have given the above particulars.

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* According to a statement quoted by Mr. Benson (*Sketches of Corsica*, p. 179), the area of the island is 2,163,110 acres, of which 618,590 are cultivated, 601,644 capable of cultivation, and 912,876 neither cultivated nor capable of cultivation.

The island is covered by a group of mountains belonging to what some geographers have entitled the Sardo-Corsican System, from its extending through both Corsica and Sardinia. The Corsican group consists of the chain of Mount Caona in the south, of the mountains of La Cagnone in the centre, those of Frontogna in the north-west, and the chain of Le Titime in the north. This line, formed by the chains of highest elevation, is nearly parallel to the line of the western coast, but at some distance inland: to the north-east and to the east of this is a second range of lower height; and the branches which extend from these ridges so nearly overspread the whole island as to leave but little country which can be called plain. Several of the peaks are very lofty, and retain the snow during the greater part of the year: the principal are Monte Rotondo, south-west of Corte and nearly in the centre of the island, 9069 feet high; Monte d'Oro, 8701 feet; Monte Paglia Orba, south-east of Calvi, 8695 feet; Punta della Capella, south-south-east of Monte Rotondo, 6723 feet; Monte de l'Incudine, south of the Punta della Capella, 6746 feet; Punta della Calva, near Punta d'Incudine, 5138 feet; Punta d'Ovacc, near Sartène, 4900 feet; and Monte Stello, north-west of Bastia, 4540 feet. On the summit of Monte Rotondo is a lake, the larger diameter of which is about 1000 feet, the smaller diameter more than half that extent. On the north side of the same mountain are several small lakes, which are replenished by the melting of the surrounding snows: these lakes are always frozen.

On the sides of these mountains rise a number of streams, forming beautiful cascades, and flowing through valleys narrow, crooked, and of rapid descent: these valleys open into wider basins, in which the streams unite, and, forming rivers, flow into the sea. The rivers are the Bevinco, the Golo, the Fiumalta, the Dalesani, the Tavignano, and the Fiumorbo, on the east coast; on the west coast are the Cigno, which flows into the gulf of St. Florent or Fiorenzo; the Dostriconi, and the Regino; the Cecco and the Ficarella, which flow into the gulf of Calvi; the Sponza; the Liamone, which flows into the gulf of Sagone; the Gravone and the Prunelli, which flow into the gulf of Ajaccio; and the Talavo and the Valinco, which flow into the gulf of Valinco. None of these rivers is navigable: the longest are the Golo, about 46 miles; the Tavignano, about 43 miles; the Talavo, about 31 miles; the Valinco, about 30 miles; and the Gravone and Liamone, about 25. On the eastern coast are some salt lakes or inlets of the sea, abounding with fish, as that of Biguglia, which is nearly 8 miles long.

The mass of the Corsican mountains consists of granite, intersected by veins of serpentine, jasper, porphyry, and other stones. The granitic range extends from near the Dostriconi river to the strait of Bonifacio. To the eastward of this, extending from Cape Corso to the south-east of Corte, the mountains, which are less elevated than those of the granite range, consist of limestone, which occupies the highest part of the range, and appears to rest upon the granite; of a grey micaceous schistus, the strata of which have experienced singular contortions; and of sandstone, the strata of which are for the most part horizontal, and which seems to consist of the debris of granite. A portion of the east coast, the parts about Bonifacio in the south, and St. Fiorenzo in the north, are occupied by limestone rocks of more recent marine formation, which contain the fossil remains of shell-fish and other marine animals. In the neighbourhood of Bonifacio these deposits rest on the granite, as do the rocks of similar formation on the opposite coast of Sardinia: the islets in the strait of Bonifacio are also of granite, which seems to have occupied both the upper and lower parts of Corsica. This recent limestone is not so fine grained as that which forms the range of mountains adjacent to the great granite range. On the east coast the sea has receded; Aleria, a Roman sea-port, is half a mile from the water.

The climate of Corsica is generally described as unhealthy. Seneca, who was exiled here, speaks of it in an epigram, as

> Corsica, terribilis quum primum incanduit æstas,
> Sævior ostendit quum ferus ora canis.

Thus Englished in Boswell's 'Corsica:'—

> O Corsica, whose raging heats dismay,
> When first returning summer pours her ray:
> Yet fiercer plagues thy scorching shores dispense
> When Sirius sheds his baleful influence.

The 'Encyclopédie Méthodique' contains a similar testimony to the insalubrity of the climate; but Boswell, whose enthusiastic admiration of every thing connected with the island has, however, diminished the value of his testimony, affirms that its insular situation renders it one of the most temperate countries in that part of Europe; that the air is 'fresh and healthful, except in one or two places, where it is moist, and where the air, especially in summer, is suffocating and sickly.' The soil is, in many places, very fertile, and capable of producing many things for which France has now to resort to distant colonies. But cultivation is very backward, and the disposition of the people indolent and careless to an unusual degree. There are large tracts of woodland in the interior, amounting to 225,000 hectares, above 560,000 acres. There are forest trees of almost every kind, especially pines, oaks, and chestnut-trees; the latter of prodigious size. The ilex or evergreen oak is common, and the mountains are covered with the arbutus or strawberry-tree. The timber which the forests yield is excellent, and would be a source of certain profit to the inhabitants, if brought down to the coast; but so great is their apathy, that the felling and transport of timber is left to the people of Lucca and Parma, who resort to the island in crowds every year, or to the agents of the French government, which procures here the finest masts for the navy. The box-tree grows to a great size. The cork oak is abundant, and the produce sent in great quantity to Marseilles. Of fruit-trees, the lemon, the orange, the fig, and the almond, are frequent; the pomegranate and the Indian fig grow to great perfection; but there are few walnut-trees, and the apples, pears, cherries, and plums are not good. The olive is found in a wild state; the industry or skill of the inhabitants not sufficing even for the simple operation of grafting. The vine is cultivated to some extent, but its culture is managed rather by the Parmesans and Luccans than by the Corsicans themselves. The wines are both red and white; that of Cape Corse resembles Malaga, that of Faviani resembles Syracuse; other wines are like Port. The mulberry was propagated by the Marquis de Marbœuf, the first governor of the island after it was ceded to France; it grows well, and it is not so much in danger from blights and thunder-storms as in Italy and the south of France; but the greater part of those propagated by M. de Marbœuf have disappeared from neglect. Wheat, rye, barley, and millet are produced, but no oats; the inhabitants feed their horses on barley instead. Chestnuts form an important article of food; and the peasants look to them, with the milk of their herds, as a sure subsistence. They resort in summer to the woods and other uncultivated lands to obtain pasturage for their cattle and chestnuts for their own subsistence at these times they make little sheds for themselves to lie under. Flax is grown in great quantity: a coarse linen is made from it. Some tobacco is raised. Much honey and wax are produced: the honey is bitter, a fact commemorated by the Roman poets.

The animals of Corsica are much the same as those of surrounding countries: there are however no wolves, and few venomous animals. The horses are small, but vigorous; they resemble the Welsh ponies or the Highland shelties. The asses and mules are also small, but active. The black cattle are larger in proportion than the horses; but the beef is lean and tough; and the quantity of milk small. Some cheese is made, but little butter; oil serving, as in Italy, for a substitute. Sheep and goats are numerous: the mutton is excellent, but the wool is coarse and hairy Game is abundant; there is the deer, the muffoli, an animal resembling the sheep in form, but with the skin hairy, and fine-grained like that of the deer, and the wild boar, which last the Corsicans are fond of hunting; there are foxes, which are very destructive, and hares, but no rabbits. There are many kinds of birds; among them the eagle and the vulture.

The mineral productions include iron of the best quality, but the value of the iron produced in 1834 was only 36,325 francs; lead, copper, and silver are not at present worked; there is also statuary marble, jasper, porphyry, granite, including the *diorite* or orbicular granite, of which handsome vases are made, limestone for building, talc, and asbestus. The coast yields black, white, and red coral; and there is abundance of fish, especially the tunny and the sardinia. There are large beds of oysters, of which many are exported to Italy. The lakes and rivers yield fine trouts and eels. (Malte Brun; *Encyclopédie Méthodique;* Boswell, *Account of Corsica;* Benson, *Sketches of Corsica.*)

There is no manufacture in the island carried on to such an extent as to demand particular notice: some coarse woollens are woven, but finer woollens are imported; the manufacture of coarse linen has been already noticed. Neither is the commerce of Corsica extensive; the internal trade of the natives is carried on chiefly by barter: money as the medium of traffic is used only in the towns: rents are paid in produce. Indeed the capabilities of the island have not been developed; nor do the energies of the people appear to have been called forth to any extent, except in the resistance which they made to the oppressive government of the Genoese. There are good harbours at Ajaccio, Calvi, Porto Vecchio, and Bonifacio, and a small one at St. Florent or Fiorenzo. The harbour of Bastia is adapted only for small vessels; Bastia is however the busiest place in Corsica, and manufactures of soap, wax, and liqueurs are carried on. The island is wretchedly off for roads: there are only the following government roads: from Bastia to St. Florent; from Bastia across the island through Corte to Ajaccio; and from the east coast to the woodland, for the transport of timber for the navy; and these roads are of the third or lowest class. The other roads are merely bye roads; and all correspondence is conveyed by a messenger on foot guarded by soldiery.

The Corsican is frugal, but his frugality produces little other result than to reconcile him to the privations which his indolence obliges him to suffer. The peasant labours little; the listlessness of the herdsman's employment seems preferable to a calling which would render more exertion necessary; and of such labour as there is the burden is thrown upon the women. 'The Corsican wife,' says Mr. Benson, 'is little more than the slave and drudge of her haughty master. He rides on his mule while she paces along at his side. To the cultivation of the plot of ground that surrounds his hut the wife has to attend, while he smokes his pipe beneath the shady chestnut, or roams about the mountains with his gun and his dog. But with this dreadful disparity of condition between the husband and wife, the latter is seldom cruelly treated, and infidelity to the marriage contract is very rare. Children do not meet with equal attention from their parents; the sons engrossing nearly all the little property possessed by the family, whilst a daughter has nothing to look forward to in leaving the house of her father but to become the slave of her husband.' One predominant characteristic of the islanders is the spirit of jealousy and revenge which divides the inhabitants of most of the villages of the interior into hostile parties or tribes. The love of personal independence makes the Corsican prefer to be the executioner of vengeance for his own wrongs, and assassination is of frequent occurrence. Robbery is also common, the central part of the island being infested with brigands; and the freedom with which they mingle in private society testifies at once the inefficiency of the police and the low state of moral feeling in the community. Gendarmerie and troops are posted in detachments over the island, for the purpose of preventing these outrages. Against the gendarmerie the Corsican bandits wage perpetual war; yet with their lawless occupation the brigands sometimes unite a courteous demeanour, and considerable moral feeling, however partial or misdirected. Rape and false witness are common crimes among the lowest class; but the spirit of revenge pervades all classes, even the wealthy and more educated. Perhaps the state of Corsica cannot be better illustrated than by saying that, except with respect to the crimes of rape and false witness, it is similar to the state of the Highlands of Scotland a century ago. It should in justice be added that the Corsicans are anxious for instruction; the gentleman who had the direction of public instruction could traverse the isle in perfect safety. The French government, even under Napoléon, himself a Corsican, seems to have done little for the substantial improvement of the inhabitants. Some institutions exist in the towns for the advancement of literature or science or the arts; but there is little to improve the moral condition or promote the physical comfort of the bulk of the people. The dress of the peasantry of the interior is simple: it consists, for the men, of a short jacket, breeches, and gaiters, all of chocolate-coloured cloth; a neat pointed black velvet cap, or a coarse woven cap of the same colour as the rest of their dress, with perhaps a sort of cowl which goes over the head, or is allowed to hang at the back of the neck. They generally carry a loaded musket, and have commonly a stiletto concealed about them, though this is prohibited by the French authorities. There are few peculiarities in the dress of the women: those in the neighbourhood of Ajaccio frequently wear a large round straw hat, the rest of their dress being little more than a shift reaching just below the knee: those near Bastia have the head covered with a sort of veil, like the Italian peasantry.

The villages are chiefly built on eminences: the houses are mere huts of four walls covered with a rude roof, and many of them have only one opening, serving for door, window, and chimney. Some are built of unwrought stone, and have a second story, the ascent to which is not by a staircase, but by a ladder, as in an English hay-loft. The fire, when one is lighted, is in the centre of the room. The furniture consists of stools, benches, and tables of the rudest construction. They use a pine stick for a flambeau or candle. These particulars apply only to the villages of the interior.

The religion is Roman Catholic. The fête-days of the patron saints of the villages are respectively observed with great devotion; a very imposing religious festival is observed in Rogation week in most of the villages. At the saints' festivals the Corsicans arrange the marriage of their daughters, and other family matters, and talk over the politics of the village or of the island. They are inquisitive, and readily enter into conversation with strangers, asking questions of them as to their business, and sometimes inquiring about the general politics of Europe.

The island constitutes the diocese of Ajaccio, the bishop of which is a suffragan of the archbishop of Aix, Arles, and Vienne: it is subject to the jurisdiction of a Cour Royale which sits at Bastia; but the power of the law is very imperfect. It forms the seventeenth military division, of which Bastia is the head quarters. Corsica sends two members to the Chamber of Deputies.

There are five arrondissements, or sub-prefectures. Bastia in the north and north-east, population in 1831, 60,209; Calvi, in the north-west, population, 20,441; Ajaccio, in the west, population 45,235; Corte, in the east, population 47,838; and Sartène in the south, population 24,244. The arrondissements of Ajaccio and Corte extend into the centre of the island, which is divided between them, the common boundary being the range of the granite mountains. The local revenues in 1833 were 235,571 francs, and the expences 176,637 francs.

Upon the first division of France into departments, Bastia was the capital of Corsica; and Bastia, Oletta, Ile-Rousse, or Isola Rossa, La Porta d'Ampugnani, Corté, Cervione, Ajaccio, Vico, and Tallano, were the chief places of arrondissements, or districts. Subsequently the island was divided into the two departments of Golo in the north, capital Bastia, and Calvi and Corte, capitals of arrondissements; and Liamone in the south, capital Ajaccio, and Vico and Sartène, chief places of arrondissements. Upon the reunion of these departments Ajaccio became the capital, perhaps by the favour of Napoléon, whose birth-place it was.

Ajaccio is the capital of the department, and the seat of the bishop's see: it is on the gulf of Ajaccio on the west side of the island; population in 1832, 8920 for the town, or 9531 for the whole commune. Bastia, on the north-east side of the island, is the seat of the Cour Royale, and the head quarters of the military division: population in 1832 9531. [AJACCIO. BASTIA.]

Corté, the capital of an arrondissement, and, during the short period of Corsican independence the seat of the native government and legislature, is on the road from Bastia to Ajaccio, and nearly in the centre of the island. It is partly at the foot, partly on the declivity, of a precipitous mountain, which is crowned by a castle or citadel. This rock is of green micaceous schistus, and rises in the midst of a valley which is surrounded by primitive (granite) mountains. The

Tavignano, and its tributary the Restonica, run near the town and unite a short distance below it. The citadel is strong by its position, with one winding path up to it; the streets of the town are steep, and there are but few really good houses.

During the period of independence there was a university here, established by Paoli: but it appears to be no longer in existence. It is mentioned however in the 'Dictionnaire Universel de la France,' by Prudhomme, published in 1804. We are not aware whether anything had been done in consequence of the legacies left by General Paoli for the instruction of his countrymen, and which it was intended to appropriate to the foundation of a college near Corté. The trade of Corté consists only in agricultural produce: indeed its situation in the midst of mountains and far from the coast, without any advantage or opportunity of inland navigation, preclude the extension of its commerce: though Boswell's enthusiasm led him confidently to pronounce that it would 'undoubtedly be one day a city of eminence.' The population, in 1832, was 3282.

Calvi is on a small peninsula projecting into the gulf of Calvi, which is on the north-west side of the island. It is a small town, defended by a fortress; but the harbour or road is capable of holding a considerable fleet. The population by the return previous to that of 1832 (we believe made in 1826) was 1175 for the commune.

Sartène is in the south part of the island, a few miles inland from the gulf of Valinco, and about two or three miles from the left or south bank of the river Valinco. The population in 1832 was 1715 for the town, or 2715 for the whole commune.

Bonifacio, in the arrondissement of Sartène, is on the straits of Bonifacio, which separate Corsica on the south from Sardinia. It is well fortified, and has a tolerably good harbour. The inhabitants, who amounted to 2944 in 1832, trade in wine and oil, and fish up coral.

St. Florent, or St. Fiorenzo, is in the arrondissement of Bastia, on the north-west side of the island, on the bay of St. Florent, close to the mouth of the little river Cigno. It is a handsome town with a small harbour. The population, by the return before the last, amounted to 500. The place is accounted very unhealthy. There is in the neighbourhood a lead mine, much vaunted by the Corsicans as yielding silver also, but the proportion is very small.

Porto Vecchio, in the arrondissement of Sartene, on the east side of the island, has the best harbour in Corsica, five miles long, and one and a half broad, with deep water and a good bottom. The town is rendered unhealthy by the neighbouring marshes, especially during the heats of summer. The inhabitants amounted, in 1823, to 1738; they trade in excellent wine. Granite is quarried in the neighbourhood.

Vico, a town the population of which may be probably estimated at [illegible], near the gulf of Sagone, trades in wine and oil. Ile Rousse, or Isola Rossa, on the coast between Calvi and St. Florent, has a small but deep harbour. Cervione, near the east coast, has probably about 1000 inhabitants. Bastelica, near the source of the Prunella, had, in 1833, a population of 2314.

The first notice of Corsica is in Herodotus, under the name Cyrnus (Κύρνος). The people of Phocæa (Φωκαίη), a city in Asia Minor, unable to resist the Persian Cyrus, determined to desert their native town. In the year 544, B. C., they embarked with their wives and children, first for Chios, and afterwards for Corsica, in which they had twenty years before founded the town of Alalia (Ἀλαλίη). Half the number, however, returned to Phocæa, but the remainder pursued their voyage and joined the people of Alalia, with whom they continued five years, plundering the surrounding nations, until having suffered dreadful loss in a sea fight against the allied fleet of the Tyrrhenians (Τυρσηνοί), and Carthaginians (Καρχηδόνιοι,) they abandoned Corsica to seek another settlement. (Herodot. I. 165, &c.) In the time of Gelon of Syracuse (B. C. 480) we find mention of Corsicans (Κύρνιοι) among the troops with which the Carthaginian Hamilcar came to the aid of Terillus, tyrant of Himera (Ἱμέρη). (Herod. vii., 165.) The Carthaginians had probably possessed themselves of Corsica, at least of the coast, and on their downfall it came under the power of the Romans. It was ravaged by these B. C. 259, but not subdued till long after. A tribute of 200,000 lbs. of wax imposed on them deserves notice, as indicating one of the chief products o. the island at that time. The Romans founded two colonies, both on the east coast: Mariana, at the mouth of the Golo, founded by Marius, and Aleria, at the mouth of the Tavignano, by the Dictator Sylla. The Romans used the island as a place of banishment. Seneca was sent to it as an exile. On the downfall of the Roman empire Corsica came into the hands of the Vandals, and subsequently of the Goths; but the successes of Belisarius forced them to abandon the island, which was then included in the exarchate of Ravenna, a dependency of the Eastern Empire. Early in the eighth century, the Saracens, then masters of Spain, possessed themselves of Corsica; but the decline of their power and the attacks of the kings of France and Aragon, and ultimately of the Pope, led them to abandon the island, which became the subject of contention between the papal see and the maritime republics of Pisa and Genoa.

The Genoese, who at length crushed the maritime power of Pisa, and succeeded in possessing themselves of Corsica, governed it with a rod of iron for several centuries. In 1553 the French, under the Marquis de Thermes, assisted by some malcontent Corsicans, and supported by a considerable Turkish fleet, attempted to conquer the island, and met at first with great success, subduing all the isle except Bastia and Calvi; but the Genoese, under the command of the veteran Andrew Doria, and supported by the emperor Charles V., at length recovered the island; and though they had by treaty granted many immunities and privileges to the natives, they soon resumed their oppressive course of government. A revolt soon took place (in. 1564) under Sampiero de Bastelica or Ornano, who had instigated the French in their attempt to wrest the island from the Genoese; but he was assassinated in 1567, and the revolt quelled shortly after. The oppressions of the Genoese became after this greater and more systematic. Commercial restrictions imposed by them, checked the development of the resources of the island; while the internal commotions of the islanders themselves, which led to continual assassinations, prevented their uniting for the common good: the legal authorities converted these assassinations and disturbances into grounds for confiscation, or exacted large sums as the price of the offender's escape. In .1676 the Genoese settled here a colony of Mainote Greeks, who had fled from the oppressions of their Turkish conquerors: their descendants still continue at or near Ajaccio. Between these settlers and the natives great jealousies and feuds arose; and when the island at last revolted, the Genoese found in these Greeks their staunchest supporters.

In 1729 the long-smothered discontent broke out. A tax collector seized some of the goods of a poor woman of the village of Bozzo, near Corte, for the amount of taxes due from her, amounting to about five-pence English. The remonstrances of the neighbours drew forth threats from the collector, and they, irritated by his conduct, drove him away with stones. The Genoese sent troops to quell the commotion, and the natives assembled to repel them: the revolt became general, and the natives placing at their head three of their countrymen, Andrew Ceccaldi, a noble, Luigi Giafferi, a man of less elevated origin but large family connexion, and Domenico Raffaeli, an ecclesiastic, possessed themselves of the town of Bastia, though they failed in their attempt on the castle. The Genoese tried at first to subdue the revolters by their own forces alone, but finding these insufficient, applied to the emperor Charles VI., who sent first in 1731 a small body of forces, which proved inadequate, and then a large army under the Prince of Wirtemberg (A.D. 1732), which compelled the islanders to submit upon terms, the observance of which the emperor guaranteed. The three chiefs, with another Corsican of note, went to Genoa as hostages, and the Genoese would have put them to death with the emperor's consent, but for the interference of the Prince of Wirtemberg and Prince Eugene of Savoy. The Genoese violated the terms, and in 1734 the revolt broke out anew: the Corsicans chose for their leaders Giafferi, the only one of their three chiefs who had returned to the island, and Giacinto Paoli.

In the year 1736 there came a vessel under the English flag from Tunis, laden with artillery and warlike stores, clothing, and money, and bringing a person of noble exterior, richly dressed in the Turkish fashion, who landed for the assistance of the islanders, claimed to be a grandee of various countries, and made the most magnificent promises of foreign aid.' This was Theodore, by descent Baron of Neuhof in Westphalia, but by birth a Frenchman, who, after a life of romantic adventure, aspired to become king of Corsica, and had secretly negotiated with some of the chiefs for the purpose. The Corsicans, struck with his personal appearance, dazzled by his promises, and looking upon his opportune arrival as little less than miraculous, willingly chose him as their king. He exercised the regal power for some months, coined money, distributed patents of nobility, instituted an order of knighthood, and, to evince his firmness, put to death three persons, members of distinguished families. He undertook many enterprises against the towns still held by the Genoese, took Porto Vecchio, but failed before Bastia. Before long however, through the failure of his promises, his popularity diminished, and he determined to leave the island, to solicit, as he said, the succours of which he had been disappointed. He arranged for conducting the government during his absence, quitted Corsica, and visited successively Italy, France, and Holland. Being arrested for debt at Amsterdam, he was released by a Jew and his associates, who furnished him with funds to fit out three merchant vessels and a frigate, with which he appeared off the island in 1738: but the Genoese had by this time called in the aid of the French, who had under M. de Boisseux made great progress in putting down the insurgents; and Theodore was afraid to land, though he put on shore some warlike stores. The next year the French, under the Marquis de Maillebois, a man of great promptitude and severity, forced the insurgents to lay down their arms. Theodore again appeared off the island in 1742; but the natives did not show any inclination to receive him. He afterwards went to London, where he was imprisoned for debt, but obtained his release through the kind interference of Horace Walpole, and made over his kingdom of Corsica as a security to his creditors. He died in London in 1756, and is buried in St. Ann's Churchyard, Westminster, where his epitaph records the strange vicissitudes of his life. Giafferi and Paoli went to Naples, in the service of which kingdom they continued till they died.

Upon the departure of the French, A.D. 1742, the revolt broke out again, Gaffori and Matra being the leaders of the Corsicans. In the year 1745 a British fleet gave assistance to the Corsicans, and by bombarding Bastia and St. Fiorenzo, obliged the Genoese in those towns to surrender. But the dissensions among the islanders, which resulted from the jealousy of Matra and Gaffori at the appointment of Count Rivarola to be generalissimo, disgusted the British, who withdrew, and the Genoese soon after recovered Bastia and St. Fiorenzo. The jealousy subsided, and the three chiefs shared the government between them, until the departure of Rivaroli on a foreign mission, on which he died in 1748, and the entrance of Matra into the Piedmontese service, left the sole power to Gaffori. Gaffori was assassinated in 1753, as was supposed by the contrivance of the Genoese: and the island continued for two years without a chief, until the appointment in 1755 of Pasquale or Pascal Paoli, son of Giacinto Paoli already mentioned, to the office of General of Corsica. Paoli defeated the Genoese and those of his countrymen who opposed him, settled the government of Corsica, and provided for the improvement of his countrymen. The cessation of those internal discords among the Corsicans, which had enabled the Genoese to maintain their footing in the island, alarmed the latter, who again implored the aid of France, which being in debt to the republic of Genoa, furnished auxiliary troops by way of payment. In 1764 the auxiliaries arrived, and were put in garrison in Bastia, Calvi, Ajaccio, St. Fiorenzo, and Algajola, near Calvi. Their instructions were to secure these points without undertaking offensive operations against the natives. From the attack of these therefore the Corsicans prudently abstained, and directed their efforts elsewhere. One of our authorities indeed (*L'Art de vérifier les Dates*, tom. xviii., p. 38), speaks of an unsuccessful attack on Bastia, made by Paoli in 1765.

In the year 1768 Genoa ceded the island to France, reserving only the right to reclaim it upon payment to the French government of the expenses they had incurred or might incur in the subjugation of it. This cession quite changed the face of affairs. A large French army was employed in active operations under the Marquis de Chauvelin, the Count de Marbœuf, and the Count de Vaux. The natives fought desperately; but they had not adequate means of resistance. Corté, which they had made their capital, was taken without resistance; and Paoli, retiring with a reduced force, was beset by a body of the enemy too powerful to be resisted. He addressed his adherents in a pathetic speech, and embarking in an English vessel at Porto Vecchio, passed over to Leghorn in 1769, and afterwards went to England, where he resided many years. The islanders continued to struggle for a time, but it was in vain: France obtained full possession.

The French Revolution revived the hopes of the Corsican patriots, and Paoli went over to Paris to thank the Constituent Assembly for having admitted Corsica to the benefit of the French laws, and recalled those who had been exiled for having sustained its independence. He was appointed military commander in Corsica; but having observed with alarm a proposition made in the French legislature to cede Corsica to the Duke of Placentia, and lamenting the course which the Revolution subsequently took, having been accused also of treason to the French government, he put himself at the head of a party of malcontents, by whom he was elected generalissimo and president of an assembly held at Corté. He now sought the aid of the English admiral Lord Hood, who commanded the Mediterranean fleet; and after some negotiations and warlike operations on a small scale, General Dundas landed on the island A.D. 1794, with five regiments. The French troops evacuated St. Fiorenzo, and shortly after Bastia surrendered with a garrison of 4000 men. Calvi also surrendered; and by negotiation between the British government and the Corsicans, the island became part of the British empire. A constitution was drawn up by an assembly of the nation at Corte, and agreed to by Sir Gilbert Eliot (afterwards Lord Minto), as viceroy of the king of Great Britain. But though it is said that the mass of the people were favourable to these proceedings, the French had still a strong party, and this was increased by disgusts which arose between the Corsicans and the English functionaries. Various incidents, trivial in themselves, increased the alienation; and the English government, jealous of Paoli's well-earned influence over his countrymen, directed him to leave the island and proceed to England. Upon his departure things assumed a more serious aspect, and the English at last determined on abandoning Corsica, which they did in 1796. The French soon repossessed themselves of it, and exiled the leaders of the revolt. ce this time Corsica has been united to France.

Bonaparte never showed much favour to Corsica: he was not popular there, nor is his memory cherished. On his downfall, owing to the oppression of the military commandant discontents broke out in Corsica, and a small British force landed on the island at the invitation of the islanders; but they held the posts which they occupied merely for the purpose of transferring them to the restored government of the Bourbons.

CORTE'. [CORSICA.]

CORTES, HERNAN, was born in 1485 at Medellin, a village of Estremadura, in Spain. He was sent to study law at Salamanca; but being of a turbulent and dissipated disposition, his father wished him to go to Italy as a military adventurer under the Great Captain. Not succeeding in this, in 1502 he obtained permission to follow his kinsman Ovando, who was appointed governor of Hispaniola; but an accident which befell him in scaling a lady's window prevented his joining Ovando till 1504. In 1511 he distinguished himself under Velasquez in the conquest of Cuba, and in 1518 was selected by this governor to undertake the conquest of Mexico, then just discovered by Grijalva. Accordingly, Cortes set sail from St. Jago de Cuba the 18th of November, 1518, with ten vessels, ten pieces of cannon, eighteen horsemen, 600 infantry, thirteen only of whom were musketeers, and the rest cross-bowmen. He touched at various places, and among them at Havannah in search of more adventurers; and setting out again February 10th, 1519, bent his course to Cozumel, left this island on the 4th of March, and proceeded up the river Grijalva, or Tabasco. Velasquez, soon after he had dispatched his lieutenant with the brilliant prospects of conquest, revoked his commission, and attempted to get him brought back under arrest; but the vigilance of Cortes frustrated all the schemes of the governor.

Having taken the town of Tabasco, with much slaughter, he received from its cacique gold and provisions, and twenty female slaves. One of these, who makes a great figure in the history of the conquest, under the name of Doña Marina, being a native of Mexico, became highly useful as inter preter, in conjunction with Jerome de Aguilar, who had been eight years prisoner in the island of Cozumel. Advancing into the interior, Cortes met at San Juan de Ulua some Mexican chiefs, who were anxious to know his intentions. Cortes laid great stress upon the importance of his mission from the great monarch of the east, and the necessity of his waiting upon their king. Native painters in the mean time were delineating on cotton cloth the ships, horses, artillery, &c. of the ominous visitors, in order to acquaint their sovereign with the wonders which words could not describe. To awe them still more, Cortes displayed the evolutions of his men and horses, and the havoc made on trees by the terrific thunder and discharge of cannon-balls. Several of the terrified Indians fell to the ground, and so many ran away, that it was difficult to subdue their alarm and regain their confidence.

During the negotiations for his progress to the capital, Cortes founded the colony of *Villa Rica de Vera Cruz*, and defeated the faction of the partizans of Velasquez, who, in the midst of the expedition, were in full readiness to revolt. Not satisfied with this, to prevent all farther hesitation and division among his followers, by leaving them no other chance of safety than in union and the conquest of a hostile country in which he shut them up with himself, he deliberately broke his ships to pieces. Cortés, moreover, gained over the caciques who were impatient of the Mexican yoke. The cacique of Zempoalla implored his assistance, and furnished him with provisions and 200 Indians to carry burdens, an invaluable service in a country where beasts of burden were unknown. On arriving at the confines of the Tlascalans, Cortes was attacked by them, under suspicion of his seeking the friendship of the Mexicans, their implacable enemies; but after an incredible slaughter, 6000 of them joined the conquerors. With this reinforcement Cortes reached the territory of the Cholulans, who, being the antient enemies of his new auxiliaries, refused to admit them into their holy city of Cholula. However, in obedience to Montezuma's injunction, they received the Spaniards, but at the same time formed a plot against them. Cortes, anticipating their treachery, destroyed 6000 of them without the loss of a single soldier. The perplexity of the Mexican councils increased with the boldness of the invaders, who were now regarded as those descendants of the sun, destined by prophetic tradition to come from the east, and subvert the Aztec empire. Accordingly, on the 8th of November, 1519, they were received at Tenochtitlan, the Mexican capital, as *Teules*, or divinities. Soon after, however, an attack was made by the natives, acting under secret orders, upon Vera Cruz, and the head of a prisoner was carried in triumph through the country up to the court, to disprove the immortality of the Spaniards. Cortes, on learning this treachery, carried off the emperor Muteczuma, or Montezuma, to his quarters, although he asserted his innocence, and offered to deliver up the chief aggressor. But Cortes demanding also the son of this officer and five officers more, had them all burnt alive in front of the imperial palace, on a pile made of the weapons which were kept in store for the defence of the state. During the execution, the emperor was loaded with irons. Subsequently he acknowledged Charles V. as his lord, but he constantly refused to embrace Christianity; and when Cortes led his soldiers to stop the human sacrifices and throw down the idols in the grand temple, both priests and people rose in arms and forced him to desist. After this provocation, the Mexicans became resolved to expel the Spaniards, and Montezuma, though a prisoner, assumed the tone of a sovereign, and ordered Cortes to depart.

After six months' occupation of Mexico, when the danger of the Spaniards had increased, 18 ships with 80 horsemen, 800 infantry, 120 cross-bowmen, and 12 pieces of artillery, were sent under Pamphilo de Narvaez by Velasquez against Cortes. Cortes, deriving fresh courage from his disappointment and indignation, persuaded Montezuma that he was going to meet his friends. Leaving him and the capital in charge of Pedro de Alvarado, with only 150 men, he marched with 250 against Narvaez, attacked him in the dead of night near Zempoalla, made him prisoner, and with the new army hastened back to Mexico, which had revolted in his absence. Although he resumed his former position there, he had soon to maintain a desperate conflict, and to retreat for safety after Montezuma had perished in attempting to appease his subjects. This success of the Mexicans led to their total defeat in the battle which they *fought and lost in the plain of* Otompan or Otumba, July 7th, 1520. This victory enabled Cortes to subdue some of the neighbouring territories with the assistance of the Tlascalans, to attach 10,000 more of them to his service, to attack Mexico again six months after his retreat, and to retake it the 13th of August, 1521, after seventy-five days of fierce and almost daily fighting. The natives once more reduced to despair rose again, and again they yielded to superior discipline, though on no occasion did native Americans so bravely oppose European troops. Thus a daring adventurer, regarded and treated by his countrymen as a rebel, after a bloody struggle, gained possession of a country which for more than three centuries formed one of the brightest gems in the Castilian crown. The atrocities of Cortes have been the subject of much declamation, but he was a soldier by profession, and while the Inquisition burnt Jews and Protestants in Spain, he could learn from his chaplains no other or better means of converting heathens than by fire and the sword.

Indignant at the ingratitude of Charles V., who listened to his enemies, Cortes returned to Spain in 1528 to face his accusers. He was received with much respect, and made Marquis of the rich valle de Oajaca, but in 1530 had to return to Mexico divested of civil power.

Being anxious, after his military exploits, to extend his fame by maritime discovery, particularly in the opening of a passage from the Atlantic to the Pacific, he fitted out at his own expense different expeditions, one of which discovered California in 1535, and he himself coasted next year both sides of the gulf of that name, then called the Sea of Cortes. He returned to Spain in 1540, when he was received by Charles V. with cold civility, and by his ministers with insolent neglect. He accompanied however this prince in 1541 as a volunteer in the disastrous expedition to Algiers, and his advice, had it been listened to, would have saved the Spanish arms from disgrace, and delivered Europe three centuries earlier from maritime barbarians. Envied and ill requited by the court, Cortes withdrew from it, leaving sycophants and detractors to reap the fruits of his labours and his genius. He died however in affluence near Seville, the 2nd of December, 1547, in the 63rd year of his age. The destruction of his fleet at Vera Cruz, with the object of compelling his followers to conquer or die—his fearless entry into Mexico—the still bolder seizure of Montezuma in his own palace—his defeat of Narvaez—his victory of Otumba—and his magnanimity in the siege of Mexico, are deeds almost unparalleled, and more like romance than reality.

Robertson has estimated the character of Cortes at least as highly as his own countrymen Bernal Diaz del Castillo, Gomara, Herrera, Solis, Lorenzana (who published, in 1770, a History of New Spain, founded on the only writings of Cortes, which consist of four letters to Charles V.), and Trueba.

CO'RTES, the name of the assembly of representatives of the Spanish nation. These assemblies have been variously constituted in different ages, and in the different kingdoms into which Spain was divided till the time of Ferdinand and Isabella. The cortes of Castile and Leon and those of Aragon were the principal. Considerable obscurity prevails as to the origin and the formation of both. The earliest national assemblies under the Visigothic kings met generally at Toledo; they consisted chiefly of the dignitaries of the church, and were called councils. After deciding all questions of church discipline, they concerned themselves with temporal affairs, and in this stage of the discussion the lay lords or barons took an active part, and the king presented his requests. In the acts of the council of Leon, A.D. 1020, ch. vi., the transition from ecclesiastical to temporal affairs is clearly pointed out:—'Judicato ergo ecclesiæ judicio, adeptaque justitia, agatur causa regia, deinde populorum.' In the acts of the council of Jaca, 1063, we find that several points of discipline were reformed 'with the consent of the nobles and prelates;' and the signatures are those of the king, the infantes, nine bishops, three abbots, and three magnates; but it is added in a note that 'all the other magnates had subscribed to the same acts.' It is now generally acknowledged, that in that age, and down to the end of the twelfth century, there was no popular representation from the towns or commons of Castile and Leon in those assemblies. (Marina, *Teoria de las Cortes*; Sempere, *Histoire des Cortes*; Dunham, *History of Spain and Portugal*.) The people are said to have occasionally attended these national councils on some solemn occasions, as in the council held at Toledo in 1135, but only as spectators and witnesses, 'to see, to hear, and to praise God.' By degrees, as the towns rose into importance, and obtained local fueros, or charters, from the kings for their own security, or formed themselves into fraternities for their mutual protection against the Moors or against the violence of their own nobles, some of them obtained at last the privilege of sending deputies to the national councils, which were now styled cortes, because, according to some etymologists, they were held at the place where the king had his court. The cortes held at Salamanca by Ferdinand II., in 1178, consisted only of the nobility and clergy; but at the cortes of Leon, A.D. 1188, we first hear that there were present deputies 'of towns chosen by lot;' and in the same year the cortes of Castile assembled at Burgos, where deputies from about fifty towns or villages, the names of which are mentioned, were present. How these places came to obtain this privilege is not known, although it is probable that it was by the king's writ or by charter. The cortes were henceforth composed of three estamentos or states, clergy, lords, and procuradores, or deputies from the enfranchised towns, forming together one chamber, but voting as separate states. It was a standing rule that general laws must have in their favour the majority of each estamento. This was the principle of the cortes of the united kingdom of Castile and Leon. The same principle existed in the kingdom of Aragon; only there the cortes were composed of four brazos or states, namely, the prelates, including the commanders of the military orders, the ricos hombres, or barons, the infanzones, or caballeros, who held their estates of the great barons, and lastly, the universidades, or deputies of the royal towns. These last are first mentioned at the cortes of Monzon, in 1131. The towns and boroughs in Aragon which returned deputies were thirty-one; but the number of deputies returned by each is not defined by the historians, any more than those for the cortes of Castile. We find the same town returning sometimes a greater, sometimes a smaller number, and at other times none at all, and a small town or village sending more deputies than a large one; while many considerable towns never returned any, independently of the seignorial towns, which of course had no representative privilege. How all this was made to agree with the manner of voting, in order to ascertain the opinion of the majority, is not clearly stated. Under the head ARAGON the reader will find an account of the peculiar institutions of that kingdom, which have been much extolled by some writers, and which appear to have been better defined than those of Castile, as the Aragonese, with the exception of the peasant serfs of the nobility, certainly enjoyed a greater share of individual liberty than the rest of the Peninsula.

In Castile, from the end of the thirteenth century, the popular estamento made rapid strides towards increasing its influence, being favoured in this by some kings or pretenders to the crown, such as Sancho IV. and Enrique II., or taking advantage of disputed successions and stormy minorities, to obtain from one of the contending parties an extension of their privileges. In 1295 the deputies of thirty-two towns and boroughs of Castile and Leon assembled at Valladolid, and entered into a confederacy to defend their mutual rights against both the crown and the nobles. Among many other resolutions, one was, that each of the thirty-two constituencies should send two deputies every two years to meet about Pentecost at Leon or some other place, in order to enforce the observance of their stipulations. In 1315, during the frightful confusion which attended the minority of Alonso XI., we find another confederacy between the nobles and the procuradores of 100 communities, with a similar clause as to deputies meeting once or twice every year. These meetings of deputies for special purposes ought not to be confounded with the general cortes of the kingdom, which were always convoked by the king, though at no fixed times. Enrique II. having revolted against his brother Pedro the Cruel, courted the support of the municipal towns, which at the cortes of 1367 demanded the admission de jure of twelve deputies into the royal council, which had till then consisted of hereditary nobles and prelates, with occasionally some civilian called in by the king. Enrique promised to comply with their request; but his brother's death having insured his seat on the throne, he evaded the fulfilment of his promise by creating an Audiencia real, or high court of appeal, consisting of prelates and civilians, and a criminal court of eight alcaldes, chosen from different provinces of the kingdom. Juan I., who succeeded him, after the loss of the battle of Aljubarrota, created a new council in 1385, consisting of four bishops, four nobles, and four citizens, with extensive executive powers. The towns next solicited the dismissal of the bishops and nobles from the council, in order that it should consist entirely of citizens; but Juan rejected the demand. They also contrived at times to exclude the privileged orders from the cortes. Marina says that the privileged orders themselves having lost much of their influence, abstained from attending the cortes; yet it is certain that although money might be voted without them, for the simple reason that they were exempt from taxation, the third estate alone paying all direct taxes, yet nothing else of importance could be decided without their concurrence. Although members of the privileged orders should not attend, they might be represented by proxy, as was the case in Aragon. Besides, the cortes were not all of one sort; there were general or solemn cortes, and especial cortes for some particular purpose. Juan appointed by his testament six prelates and nobles as guardians of his infant son Enrique III., who were not, however, to decide in any important affair without the concurrence of six deputies, one from each of the cities of Burgos, Toledo, Leon, Seville, Cordova, and Murcia. 'The fourteenth century seems to have been the brightest period of popular or more properly municipal representation in Spain. The cortes were frequent, and the subject of their deliberations of the most important nature. But Spain had never a definite representation; to no meeting of this period did all or half the great towns send deputies; and those which did return them appear to have observed little proportion in the numbers. There can be no doubt that two should be returned from each; yet in the cortes of Madrid, in 1390, we find that Burgos and Salamanca sent eight each, while the more important cities of Seville and Cordova sent only three; Cadiz only two; Oviedo and Badajoz one; Santiago, Orense, Mondonedo, and other great cities of Galicia sent none at all. In fact, only forty-eight places returned deputies to these cortes, and the number, at the most, was inconsiderable. Incidentally, we learn that in the assemblies of this period the archbishop of Toledo spoke for the ecclesiastical state, and the chief of the house of Lara for the nobles. Some of the deputies contended for the precedence in voting, as well as for that of seats. This rivalry was more conspicuous between Burgos and Toledo, until Alonso XI. found the means to appease it. "The deputies of Toledo," said the monarch in the midst of the assembly, "will do whatever I order them, and in their name, I say, let those of Burgos speak." The municipal corporations could boast of something more than the honour of returning deputies, an honour to which many of them were perfectly indifferent. Their condition was far superior to that of the seignorial towns, which, for the most part, groaned under the oppressions of the nobles.' (Dunham, *History of Spain and Portugal*, b. iii. sect. 3, ch. ii.)

The remonstrances or petitions of the general cortes to the king generally began as follows:—'The prelates, lords, and caballeros of the kingdoms of Castile and Leon, in the name of the three estates of the kingdom,' &c. Remonstrances from the deputies of the towns began:—'Most high and powerful prince! your very humble vassals, subjects, and servants, the deputies of the towns and boroughs of your kingdoms, who are assembled in your presence by your order,' &c. (Cortes of Valladolid, June, 1420.)

In the cortes of 1402, Enrique III. demanded for his wars with the Moors a supply of 60,000,000 of maravedis, but the deputies granted only 45,000,000. The king then proposed that if the money should be found insufficient, he might be allowed to raise the deficiency by a loan without convoking the cortes afresh for the purpose. To this the majority of the deputies assented. By his testament Enrique excluded the citizens from the Council of Regency during the minority of his son Juan II., and after this they were no longer admitted into the royal council. Thus the municipal towns lost a great advantage they had gained 30 years before under Juan I. They soon after sacrificed, of their own accord, their elective franchises. The expenses of the deputies to the cortes had been till then defrayed by the towns, but now having lost their influence at court by their exclusion from the royal council, the towns began to complain of the burthen. Juan II. listened attentively to their complaints, and, in the cortes of Ocaña, 1422, he proposed that the future expenses of the deputies should be defrayed out of the royal treasury, a proposal which was willingly accepted. Accordingly, in the next cortes, 12 cities only, Burgos, Toledo, Leon, Zamora, Seville, Cordova, Murcia, Jaen, Segovia, Avila, Salamanca, and Cuença, were summoned to send their deputation; some other towns were informed that they might entrust their powers to any deputy from the above. The privilege was subsequently extended to six more cities: Valladolid, Toro, Soria, Madrid, Guadalaxara, and Granada. These 18 places constituted henceforth the whole representation of the kingdoms of Castile, Leon, Galicia, and Andalusia. The other communities at last perceiving the advantage they had lost, petitioned to be restored to their right, but found themselves strenuously opposed by the 18 privileged towns. The influence of the court was openly exercised in the elections of these towns, and although the cortes of Valladolid in 1442, and those of Cordova in 1445, requested the king to abstain from such interference, yet the practice became more barefaced than ever. In 1457 Enrique IV. wrote to the municipal council of Seville, pointing out two individuals fit to be deputies in the next session, and requesting they might be elected. The municipal councils, which elected their own officers as well as the deputies to the cortes, were composed of all the heads of families, but by degrees the crown interfered in the appointment of the municipal officers. [AYUNTAMIENTO.]

Thus long before Charles I. (the emperor Charles V.), who has been generally accused of having destroyed the liberties of Spain, the popular branch of the representation was already reduced to a shadow, for the deputies of the 18 cities, elected by court influence, were mere registrars of the royal decrees, and ready voters of the supplies demanded of them. Under Ferdinand and Isabella the royal authority became more extended and firmly established by the subjection of the privileged orders; the turbulent nobles were attacked in their castles, which were razed by hundreds, and the Santa Hermandad hunted the proprietors throughout the country. Many of the grants by former kings were revoked and the proud feudatories were tamed into submissive courtiers.

Charles only finished the work by excluding the privileged orders from the cortes altogether, he and his successors contenting themselves with convoking the deputies of the 18 royal cities of the crown of Castile on certain solemn occasions, to register their decrees, to acknowledge the prince of Asturias as heir apparent to the throne, to swear allegiance to a new sovereign, &c. The policy of absolutism has been the same in all countries of Europe, using the popular power against the aristocracy, in order to reduce and destroy both in the end.

In Aragon, Valencia, and Catalonia, which formed the dominions of the crown of Aragon, the cortes of each of these three states continued to assemble under Charles I. and his successors of the Austrian dynasty, who convoked them in their accustomed manner by brazos or orders, and they maintained some show of independence, although in reality much reduced in importance, after Philip II. had abolished the office of the Justiza. [ARAGON.] But, after the War of the Succession, Philip V. of Bourbon formally abolished the cortes of these states by right of conquest, as he expressed it, because they had taken part with his rival the Archduke Charles.

When, in 1808, the Spanish people rose in every province against the invasion of Napoleon, the king was a prisoner in France after having been obliged by threats to abdicate the crown, and the nation found itself without a government. Municipal juntas were formed in every province, consisting of deputies taken from the various orders or classes of society, nobles, clergymen, proprietors, merchants, &c. These juntas sent deputies to form a central junta, with executive powers for the general affairs of the country, but a legislature was still wanting. The central junta was called upon to assemble the cortes for all Spain. They at first thought of reviving the antient cortes by estamentos or brazos, but many difficulties presented themselves. The difference of formation between the old cortes of Aragon and those of Castile; the difficulty of applying those forms to the American possessions of Spain, which were now, for the first time, admitted to equal rights with the mother country, but where the same elements of society did not exist, at least not in the same proportion; the difficulty even in Spain of collecting a legitimate representation of the various orders, while most of the provinces were occupied or overrun by French armies, and while many of the nobility and the higher clergy had acknowledged the intrusive king Joseph Napoleon; all these, added to the altered state of public opinion, to the long discontinuance of the old cortes by orders or states, to the diminished influence of the old nobility, and the creation of a new nobility during the latter reigns merely through court favour, made the original plan appear impracticable. The situation of the country was in fact without a parallel in history. The central junta consulted the consejo (reunido) or commission of magistrates, from the old higher courts of the monarchy, who proposed to assemble deputies of the various brazos or estamentos, all to form one house, a proposal extremely vague and apparently impracticable, which looks as if made to elude the question. Jovellanos and others then proposed two houses, constituted as in England; but this would also have been a new creation without precedent in Spain, and surrounded by many difficulties, the state of society being greatly different in the two countries. Meantime the central junta being driven away by the French, first from Madrid, and afterwards from Seville in January, 1810, took refuge at Cadiz, which became the capital of the Spanish patriots, whither a number of persons from the various provinces and classes had flocked. Before leaving Seville, the central junta issued regulations addressed to the provincial juntas about the manner of electing the deputies to the cortes, stating at the end that 'similar letters of convocation would be addressed to the representatives of the ecclesiastical brazo and of the nobility.' This, however, was never done.

The central junta soon after arriving at Cadiz resigned its powers into the hands of a council of regency composed of five individuals, but before its resignation it issued a decree approving of the plan of Jovellanos for two chambers, and recommending it to the regency. The regency however paid little attention to this recommendation; it seemed to hesitate during several months about convoking any cortes at all, for there was at Cadiz a party of pure absolutists opposed to any representation whatever. The regency again consulted the consejo reunido, the majority of which, departing from its former opinion, gave up the idea of cortes by estamentos, and proposed the election of deputies without distinction of classes. The council of state being likewise consulted by the regency, decided that, owing to the actual state of affairs, it was best to elect the deputies without estamentos, reserving to the 'representatives of the nation once assembled to decide whether the cortes should be divided by brazos or into two chambers, after listening to the claims of the nobility and clergy.' The regency at length issued letters of convocation for the deputies of all the provinces to assemble in cortes at the Isla de Leon on the 24th September, 1810. The elections for those provinces which were entirely occupied by the French, were made at Cadiz by electoral juntas, composed of individuals of those provinces who had taken refuge there. A similar process was adopted with regard to the American provinces. (Arguelles, *Examen historico de la Reforma Constitucional*; Jovellanos, *Memoria a sus Compatriotas*, with *appendix* and *notes* to the same.)

The cortes, styled 'extraordinary,' sat at Cadiz from September, 1810, till September, 1813. During this time, amidst numerous enactments which they passed, they framed a totally new constitution for Spain, which has become known by the name of 'the Constitution of 1812,' the year in which it was proclaimed. This constitution established the representative system with a single popular chamber, elected in a numerical proportion of one deputy for every 70,000 individuals. The elections are not direct, but by means of electoral juntas or colleges, as in France: assembled citizens of every parish appoint, by open written votes, a certain number of delegates, who choose, by conference among themselves, one or more parish electors, in proportion to the population. All the parish electors, of every district, assemble together at the head town or village of the same, and there proceed to elect by ballot the electors for the district. All the district electors of one province form the electoral junta which assembles in the chief town of that province to appoint the deputies to the cortes, either from among themselves or from among the citizens who are not district electors, provided they are Spanish citizens born, in the full exercise of their civil rights, are more than 25 years of age, and have had their domicile in the province for at least seven years past. By Art. 92 a qualification was inserted of a yearly income, the amount and nature of which were left to the discretion of future cortes to determine. Every district elector, in succession, steps up to the table where the president and secretary are, and tells the name of his candidate, which the secretary writes down. The scrutiny then takes place, and the majority of votes decides the election. The deputies elected receive full powers, in writing, from their electors, 'to act as they think best for the general welfare, within the limits prescribed by the constitution, and without derogating from any of its articles.' The deputies are allowed by the respective provinces a fixed emolument during the time of the sessions. The ordinary cortes assemble once every year, in the month of March, and the session lasts three or at the utmost four months. The deputies are renewed every two years.

These are the principles of the formation of the cortes, which, whatever may be their merits, have evidently little in common, except the name, with the old cortes of Castile or Aragon. With regard to the legislative powers of the cortes, their influence over the administration, and the authority which is left to the executive, we must refer the reader to the text of the Constitution. The king has a veto for two years following; but if the resolution be persisted in the third year his veto ceases. While we are writing this article, the cortes assembled at Madrid, December, 1836, are occupied in making modifications in the Constitution, especially by the establishment of a second chamber, but it is not yet known how it will be constituted.

The extraordinary cortes of Cadiz were succeeded in October, 1813, by the ordinary cortes, elected according to the principle of the Constitution. In January, 1814, they transferred their sittings to Madrid, which had been freed from the French. In March, of that year, King Ferdinand returned to Spain, and soon after dissolved the cortes, abrogated the Constitution, and punished its supporters. In 1820 the Constitution was proclaimed again through a military insurrection; the king accepted it, and the cortes assembled again. The king and the cortes however did not remain long in harmony. In 1823 a French army, under the duke of Angoulême, entered Spain; the cortes left Madrid, taking the king with them to Seville, and thence transferred him by force to Cadiz. Cadiz having surrendered to the French, the cortes were again dispersed, the Constitution was again abolished, and the liberals were again punished. This name of 'liberal,' which has become of such general use in our days, originated in the first cortes of Cadiz, where it was used to designate those deputies who were favourable to reform, whilst the opposite party were styled 'serviles.' (Arguelles, end of chap. v.)

The history of the first cortes of Cadiz has been eloquently written by Arguelles; that of the cortes of 1820-3 and of the subsequent royalist reaction, is found in numerous works and pamphlets of contemporary history, written with more or less party spirit, among which the least partial is perhaps the *Revolution d'Espagne, Examen Critique*, 8vo., Paris, 1836: it professes to be written by a Spanish emigrant, who, though no great admirer of the Constitution of 1812, speaks with equal freedom of the guilt and blunders of the violent men of both parties.

Ferdinand VII., before his death, in 1833, assembled the deputies of the royal towns, according to the antient form, not to deliberate, but to acknowledge as his successor his infant daughter Isabella. Some time after his death the queen regent proclaimed a charter for the Spanish nation, which was called Estatuto Real. It established the convocation of the cortes and its division into two houses, the procuradores, or deputies from the provinces, and the proceres, or upper house, consisting of certain nobles, prelates, and also of citizens distinguished by their merit. The power of the cortes however was very limited, the initiative of all laws belonging exclusively to the crown. This charter did not last above two years. In the summer of 1836 insurrections broke out at Malaga and other places, where the Constitution of 1812 was again proclaimed; and at last the insurrection spread among the troops which were doing duty at the queen's residence, at La Granja, in consequence of which the queen accepted the Constitution 'subject to the revision of the cortes.' The cortes were therefore convoked according to the plan of 1812, and assembled at Madrid in November, 1836.

The history of the cortes of Portugal is nearly the same as that of those of Spain, only that the towns which sent deputies were comparatively fewer, seldom more than ten or twelve at a time, and the influence of the privileged orders greater in proportion. The nobles having by degrees become courtiers, as in Spain, the kings reigned in fact absolute. In latter times there were less remains of popular freedom observable in Portugal than in Spain. In 1820, while King João VI. was in Brazil, a military insurrection broke out in Portugal, and a Constitution was framed in imitation of the Spanish one of 1812, but it was soon after upset. For an account of these transactions see Kinsey's *Portugal Illustrated*, 1828. After the death of King João, his son, Don Pedro, gave a charter to Portugal, establishing a system of popular representation with two houses; this charter was afterwards abolished by Don Miguel, and again re-established by Don Pedro. In 1836, soon after the affair of La Granja above mentioned, a fresh insurrection broke out at Lisbon, the charter was abrogated, and the Constitution of 1820 was again proclaimed.

The Aragonese, during their period of splendour, extended their representative system by brazos or estamentos to the island of Sardinia, then subject to the crown of Aragon, and the institution remains to this day under the name of Stamenti. They are convoked by the crown on particular occasions, chiefly to grant extraordinary supplies. [SARDINIA.]

CORTO'NA, a city and bishop's see in Tuscany, in the province of Arezzo, from which town it is fifteen miles distant south by east. It is built on the slope of a steep hill facing the south, and commands a splendid view of the fertile Val di Chiana, and of the Thrasymenian lake. Its origin is lost in the remotest antiquity. Under the name of Corytum, it was one of the principal cities of the Etruscans. Its walls which still remain are of the structure called Cyclopean or Pelasgic, consisting of large polygonal stones put together without cement. About the middle of the fifth century of Rome we find Corytum allied to the latter, and it remained faithful to its alliance during the second Punic war, when Hannibal ravaged its territory before the battle of the Thrasymene lake. Little is known of its subsequent history, except that according to Dionysius and Pliny the elder, it received a Roman colony. History is likewise silent about Cortona, after the fall of the empire, until the end of the 12th century, when it appears as an independent municipal community, like most other Italian cities at that time, having its consuls, and its council composed of the majores milites, or nobles, and the capi d'arti e mestieri, or head tradesmen. It was repeatedly at war with its neighbours of Arezzo, whose bishop claimed temporal as well as spiritual jurisdiction over Cortona. Having taken the part of Frederic II., the people of Cortona were excommunicated by the Pope; but after the death of that emperor, they made their peace with Rome and became allied to the Florentines, when, in February 1258, they were suddenly assailed in the night by the people of Arezzo, who, at the instigation of their bishop Ubertini, scaled their walls, plundered the town, and razed their castle. Many of the citizens escaped to Perugia, but returned in 1261, by an agreement made with the bishop, who however continued to annoy them, till he was killed at the defeat of Campaldino by the Florentines in 1289. In 1325 Cortona was erected into a separate see by Pope John XXII. It then became subject to a powerful family called Casali, who assumed the title of Vicars Generals and Lords of Cortona for nearly a century. In 1409 the citizens being dissatisfied with their lord, called in the Neapolitan troops of King Ladislaus, who put to death Casali, took possession of Cortona, and then sold it two years after to the Florentines for 60,000 golden florins. From that time Cortona remained subject to Florence.

The city with its suburbs contains 5,000 inhabitants. Its territory is very fertile, especially in wine, corn, olive and mulberry trees. The high road from Florence to Perugia passes near Cortona.

The cathedral, built in the eleventh century, has some good paintings, and a fine basso rilievo of the Roman time. Several other churches and convents are also rich in paintings, especially by Luca Signorelli, a native of the place. There is a diocesan seminary for clerical students, a college kept by the fathers Scolopj, a conservatorio, or female house of education, kept by the nuns of Frances de Salis, and a school of drawing. The Accademia Etrusca, founded in 1726, has published several volumes of memoirs on Etruscan antiquities, and has a library with some valuable MSS., and a museum. Cortona has produced several distinguished artists and philologists. There is in the suburbs a remarkable Etruscan monument, supposed to have been a sepulchre, of the same construction as the city walls; it has been named strangely enough La Grotta di Pittagora, some one having chosen to misplace the r in Cortona, thus making it into Crotona, the residence of that philosopher. (Repetti, *Dizionario Geografico Storico della Toscana;* Valéry, *Voyages Littéraires en Italie.*)

CORTO'NA, PIE'TRO BERRETTI'NI, called Pietro da Cortona, was born November 1, 1596, at Cortona. His first master was Antonio Commodi, but he afterwards studied under Ciarpi, at Rome. Being employed by a gilder to make some little figures, his skill attracted the notice of the Marquis of Sacchetti, who visited the workshop, and Pietro was induced to show some of his paintings. The marquis took him at once under his protection, and procured him numerous commissions, and among them an order to paint some rooms in the palace of the reigning Pope Urban, in the Piazza Barberini. Cortona afterwards travelled, and executed various pictures by the way. He was employed by Ferdinand II. to paint some pictures in the Pitti palace, and stayed some time in Florence: but he left it in disgust, because the grand duke had listened to certain detractors, who had accused Cortona of palming his own pictures upon the prince in place of some of Titian's which Ferdinand desired to purchase of him. He settled finally in Rome, and enjoyed the patronage of successive pontiffs, until Alexander III. made him a knight. He died, oppressed with years and the gout, May 16, 1669, full of wealth and honour.

Pietro da Cortona studied the works of Raphael, Michel Angelo, and especially those of Polidoro da Caravaggio, from whom he learned to imitate the style of the later antiques, taking for his immediate model the sculpture of Trajan's column. His style of drawing is free, bold, and vigorous, and even coarse; seldom finished in any except the most conspicuous parts. In design he is learned and masterly, though somewhat mannered and overcharged. His colour is sober and harmonious. His principal works are at Rome, in the Barberini and in the Sacchetti palaces, and at Florence, in the Pitti palace.

Cortona practised architecture as well as painting. He was buried in the church of S. Martin at Rome, which is considered his best architectural work; and at his death he bequeathed to it a hundred thousand crowns.

Cortona had many famous pupils; among them were Ciro Ferri, Romanelli, Giordani, Borgognone, and Testa: the last was expelled from his school because he indulged in unworthy reflections upon his teacher's style, from which he nevertheless could never detach himself in after life. (Pascoli.)

CORUNDUM. Several substances differing considerably in colour, and sometimes in form, but nearly agreeing in composition, are classed together under the name of corundum, which is that given to the common variety by the natives of India.

1st. *Sapphire*, of which there are several varieties, the names of which are dependent chiefly upon their colour: the *white sapphire*, which is transparent or translucent; the *oriental sapphire*, which is blue; *oriental amethyst*, which is purple; the *oriental topaz*, yellow; the *oriental emerald*, green; and some other varieties occur, as the chatoyant and the opalescent sapphire. The sapphire occurs in rolled masses and crystallized, and the primary form of this and every variety of crystallized corundum is a slightly acute rhomboid, presenting a great variety of secondary forms; it usually occurs in the form of six-sided prisms variously terminated. Its specific gravity is 3·975 to 4·161; it possesses double refraction, and is inferior in hardness only to the diamond. Alone, before the blow-pipe it suffers no change; with borax it fuses slowly but perfectly, into a colourless glass; in one direction only the crystals cleave readily parallel with the faces of the primary rhomboid, and present a very brilliant surface; the cross fracture is conchoidal. The finest are found in Ceylon. According to the analysis of Chenevix, the sapphire consists of—

Alumina . . .	92
Silica . . .	5·25
Oxide of iron . .	1
	98·25

According, however, to Dr. Thomas Muir, this substance is pure alumina; containing no silica but what is abraded from the mortar. (Thomson's *Mineralogy, &c.*, vol. i. p. 217.)

2nd. *Ruby*. Colour blood-red or rose-red, sometimes a tinge of violet; primary form as above, and generally occurs in six-sided prisms; it is not so hard as the sapphire, and is more readily cleaved. Chenevix's analysis gives—

Alumina . . .	90
Silica . . .	7
Oxide of iron . .	1·2
	98·2

But if the silica was derived from the mortar, as supposed in the case of the sapphire, then this substance, like it, must be regarded as alumina, nearly or quite pure.

Common corundum, the variety usually called *adamantine spar*, occurs like the sapphire and ruby, commonly in the secondary form of six-sided prisms, but usually much larger. It is sometimes nearly colourless, and rather translucent; it presents great variety of colour, but is most commonly greenish or greyish; occasionally brown or red, rarely blue. Although its most common form is the six-sided prism, it occurs, though rarely, also in acute and obtuse double six-sided pyramids. On account of its extreme hardness, it received the name of adamantine spar. It occurs in China, Bengal, Malabar, Tibet, the Carnatic, &c. It is used in the East Indies for cutting and polishing precious stones, and also granite and other hard rocks that are employed in the temples and other public monuments. According to Chenevix, the Carnatic corundum—and the other varieties differ but little,—yielded

Alumina . . .	91
Silica . . .	5
Oxide of iron . .	1·5
	97·5

Emery. This substance, which, when reduced to powder, is much used for polishing hard bodies, though very different in appearance from the preceding, is, on account of its hardness and analysis, regarded as amorphous corundum. Its colour is usually grey; its lustre is somewhat glistening. Its specific gravity is about 3·66 to 4; it occurs massive, and is granular. It is principally imported from the island of Naxos in the Archipelago, and was found by Mr. Smithson Tennant to consist of—

Alumina . . .	86
Silica . . .	3
Oxide of iron . .	4
	93

It occurs also in Italy, Spain, and Saxony; and it is said, in small quantities, also in Wicklow.

CORUNNA, or, more properly, **CORUÑA** (*Adrobicum* and *Coronium*), so named from *columna*, or the tower of Hercules, which still exists, and the origin of which has been referred as far back as the Carthaginians, but the learned Cornide brings it down to the reign of Trajan. It was converted, in 1791, at an expense of 40,000 dollars, into a lighthouse. This city stands on the neck of a peninsula, defended by a chain of bastions, at the entrance of the bay of Betanzos (the true Flavium Brigantium), and at the head of a spacious harbour, which is secure against all winds, except those blowing from the south and the east. It is further protected by two forts, one of which, that of St. Anthony, commands part of the road. Though not the capital of Galicia, it is the head-quarters of the military and naval force, and a considerable portion of the Spanish navy was formerly stationed here. Its commerce increased considerably by the opening of the American trade. It has still extensive manufactures of linen and baizes, and carries on considerable fisheries, especially of *sardinas*. Its population is about 22,000.

On the ramparts of the city the inhabitants have erected a monument to General Sir John Moore, who fell before the city, January 16th, 1809.

It is 28 miles north of Compostela, 30 miles north-west of Lugo; 43° 23′ N. lat., 30° 20′ W. long.

(*Descripcion del Reino de Galicia publicada de orden de la Junta de Gobierno*, por Don José Lucas Labrada.)

CO'RVIDÆ, crows, a family of *Conirostres*. The *bill* is strong, slightly cultrirostral, or more or less compressed; the gape or commissure straight. The *nostrils* are covered with stiff bristle-like feathers directed forwards.

'The Nucifraga, Briss., our British nutcracker,' says Mr. Vigors, in his paper 'on the Natural Affinities that connect the Orders and Families of Birds,' Linn. Trans., vol. xiv.,

p. 447, 'closely resembling the preceding groups' (fam. *Sturnidæ*) 'in the form of its bill, in conjunction with *Barita*, Cuv., introduces us into the family of *Corvidæ*. From that genus we may trace a line of affinities, through some intervening forms, to the *Jays* and *Rollers*, *Garrulus*, Briss., and *Coracias*, Linn., until we arrive at the *Corvus* of Linnæus, which again branches out into several groups closely allied to each other, but differing considerably in the structure of the bill. Hence we proceed by means of *Glaucopis*, Forst., to some genera, among which we may particularize *Ptilonorhynchus*, Kuhl, *Crypsirina*, Vieill., *Eulabes*, Cuv., and *Fregilus*, Cuv., which, in the metallic lustre of their plumage and the velvet-like process that in some species ornaments the face, indicate our approach to the *Birds of Paradise*. The last-mentioned genus *Fregilus*, in particular, by its curved and slender bill, brings us immediately into this group, the *Paradisea*, Linn., which, in conjunction with the *Epimachus* of M. Cuvier, terminates the family of *Corvidæ*. Here we shall probably find the passage from the present to the succeeding family. The *Epimachus*, more united in its front toes than the *Corvidæ* in general, holds a middle station in respect to that character between the two groups; while in the length and curvature of its bill it approaches, in conjunction with many of the *Paradiseæ*, to some of the extreme species of the *Buceridæ*, among which the *Buceros nasutus* of Dr. Latham may be instanced.' Mr. Vigors, in a note, says that he speaks with considerable hesitation as to the situation of *Epimachus*, which bears too strong a resemblance to the *Promerops* of M. Brisson, a group feeding on vegetable juices, with an extensile tongue, to permit him to separate it without some expression of doubt.

Mr. Swainson, in 'Fauna Boreali-Americana' (vol. ii.), thus writes on the *Corvidæ*: 'There are some singular and highly interesting peculiarities exclusively belonging to groups pre-eminently typical, which demand the deepest attention of the philosophic naturalist. One of the most striking of these is the great difference between those forms which belong to perfect and natural genera, *strictly so termed*. We might cite the restricted genera, *Tanagra*, *Casmarhynchus* (Casmarhynchos), and *Coccothraustes*, as remarkable examples of this fact, and as groups which would repay the most minute analysis. This peculiarity sometimes extends to higher groups; and in the present family, the most pre-eminently typical in the whole circle of ornithology, it is more striking than in any other. It is perhaps to this circumstance that we must attribute the very imperfect manner in which the internal relations of the *Corvidæ* have been illustrated, and the artificial distribution that has been made of the groups it contains. Our space indeed will not permit us at present to throw much light upon the subject, further than what may be gained by studying the following table of sub-families.

Analogies.		Sub-families.
	1. Typical Group.	
Conirostres.	Wings lengthened, obliquely pointed; lateral toes equal.	*Corvidæ*
	2. Sub-typical Group.	
Dentirostres.	Wings shorter, rounded, convex; lateral toes unequal.	*Garrulinæ.*
	3. Aberrant Group.	
Scansores.	Bill short, entire, light; feet short.	*Crypsirinæ.*
Tenuirostres.	* * * * * * * *	?
Fissirostres.	Bill slender, lengthened; feet short.	*Fregilinæ.*

A glance at the modern arrangements will show how essentially we differ from all ornithologists who, like us, have attempted to elucidate this very intricate family. The tests, however, by which every series of animals thought to be natural must be tried will bring to light many remarkable peculiarities which belong only to the foregoing arrangement. Yet, however confident we feel on the general accuracy of this sketch, we are unprepared either to show in what manner the sub-families are connected, or to refer many of the modern genera to their natural divisions. The Jays (*Garrulinæ*) unquestionably represent the Bush-shrikes (*Thamnophilinæ*); while the genus *Crypsirinæ* and the short-legged *Glaucopinæ* of M. Temminck form part of a group typifying the Drongo Shrikes. The slender bill of the *Fregelinæ*, at the opposite side of the circle, indicates the position of the Fissirostral group, corresponding to the *Buceridæ*. But we have many doubts on the true nature of the Tenuirostral type, since it must not only represent the Hang-nest Starlings (*Icterinæ*), but also the Caterpillar-catchers (*Ceblepyrinæ*) and the typical *Ampelidæ* or Chatterers. Now it will strike every ornithologist who has the means of examining the *Gracula calva* of authors, that notwithstanding its general resemblance to the *Chauve* of Le Vaillant (*Ois. de l'Amérique*, pl. 49), it is decidedly a crow; while the latter is considered by Le Vaillant as unquestionably belonging to the *Ampelidæ*. We have, therefore, good reason to suspect the *Gracula calva* to be one of the tenuirostral types of the *Corvidæ*. In all probability it will prove to be the sub-family type representing that tribe, although at present we choose to omit its designation in the foregoing table.

On the situation of such singular or apparently isolated genera as *Picathartes*, Less., *Podoces*, Fisher, and more particularly *Barita*, Cuv., we cannot at present give any opinion worth recording. [Barita.] We suspect that *Nucifraga* is the scansorial subgenus of *Corvus*; and notwithstanding the confidence with which the genus *Coracias* has been referred, in the natural system, to this family, we have not the least hesitation in placing it with the *Fissirostres*. It is indeed almost inconceivable that the strongest prejudice in favour of any theory, professing to follow *natural* affinities, could so far have blinded the judgment of a naturalist as to make him separate *Colaris* from *Coracias*, and to violate nature by placing these two forms (so intimately allied that we scarcely know how to distinguish them), not only in two distinct families, but actually in two widely situated tribes. Setting aside every other consideration, and looking merely to the wide gape, which has been so much insisted upon as a peculiarity of the genus *Colaris*, we find that this character is incontestably as much developed in *Coracias*: although a superficial observer, deceived by the length of the bill in the latter, will be led to think quite differently. Both genera, in fact, would be correctly described as having the *rictus wide, opening half way beneath the eye*. A passage in Mr. Vigors's and Dr. Horsfield's 'Description of the Australian Birds in the Collection of the Linnean Society' (*Linn. Trans.*, vol. xv.), is referred to in the observations above quoted. In a note to the word tribes, the following words are quoted: 'Judging however from external characters, *we have no hesitation* in stating our opinion that these relations (between *Colaris* and *Coracias*) are merely analogical.' (*Linn. Trans.*, xv. p. 203.) The following is the part of the paper alluded to—'This bird (*Eurystomus*, Vieill., *Colaris*, Cuv., *Coracias Orientalis*, Linn.), which seems to spread itself very generally over the eastern world, was originally placed by Linnæus among the *Rollers*, or his genus *Coracias*; and although it has latterly been formed into a distinct genus from that group, it has still been arranged next to it by the greater number of systematic writers. M. Vieillot, observing the extreme width of the base of the bill, grouped it among the *Berry-eaters* (Baccivori), a family which he formed out of the genus *Ampelis*, Linn., and some conterminous birds. He however still assigned it a station in the series of his genera, immediately subsequent to the Linnean genus *Coracias*. The bird evidently exhibits strong relations to both these groups. In its colours, its size and strength, and its general form, it bears a resemblance to the *Rollers*; while in the wide gape of the bill it equally seems to approach the broad-billed *Berry-eaters*. Judging however even from external characters, we have no hesitation in stating our opinion that these relations are merely analogical, and that the natural station of the bird is in the tribe of *Fissirostres*, but at that extremity of the group where it joins the *Dentirostres*. The shape of the wing, evidently formed for a rapid flight—the comparative shortness and weakness of the legs, indicating the pursuit of an aërial rather than of a terrestrial prey—and the notched apex of the bill, denoting its food to be rather animal than vegetable—all are characters which point out its affinity to the *Fissirostral* group, whose perfection consists in their powers of flight, and of inclosing their prey within their gape, as they pursue it on the wing. The brilliant colours of this bird, which have hitherto led to its being placed among the *Rollers*, equally associate it with the present family of *Todidæ*[*] and with the neighbouring *Halcyonidæ*, while the bill appears decidedly formed according to the same model as that of *Eurylaimus* and the

[*] Under which it is placed by MM. Vigors and Horsfield.

conterminous group of *Podargus*. We had much pleasure in finding that our conjectures respecting the affinities of this group, which we had drawn merely from its external characters, were confirmed by the account of its habits and mode of life, which we have extracted above from Mr. Caley's manuscripts. We must observe, in addition, that this naturalist, arranging his birds without any predilection for systems, and in consonance merely with what appeared to him to be their natural affinities, of which he formed his judgment by actual observation of their manners, has grouped these birds in the same case with the *Caprimulgi*, *Podargi*, *Hirundines*, and *Artami*, in which situation they may still be seen.'

Lesson, in his 'Manual,' divides the Corvidæ into two sections. 1. The *true Crows;* and 2. The Birds of Paradise (Les Paradisiers).

Genera. Corvus.

Bill straight, large, compressed, and a little swollen on the sides; convex and curved towards the point, its edges cutting. *Nostrils* open. Fourth *quill* the longest. *Tail* even, rounded, or rectilinear.

'The genus Corvus,' says M. Lesson, 'is very numerous in its species. Birds which differ in their characters and habits from the crows, properly so called—which are the largest of the Passeres, whose way of life is carnivorous, and their food composed of all sorts of substances, especially carrion—have been joined to the genus. The crows possess much intelligence, are easily tamed, and become very familiar. They are very voracious and live in numerous bands, and their harsh cry has been called *croaking*. They often commit such havoc, that a price is set on their head in some countries. They have at all times been objects of superstition to the people. Some of the crows are sedentary, others again are travellers, and migrate annually. They moult but once a year.'

Geographical Distribution. The genus is found in all the four quarters of the globe.

Example. *Corvus Corax*. This well-known bird is the Κόραξ of the Greeks, *Corvus* of the Latins, *Corvo*, *Corbo*, and *Corvo grosso* of the modern Italians, *El Cuervo* of the Spaniards, *Corbeau* of the French, *Der Rabe* and *Der Kolkrabe* of the Germans, *Korp* of the Swedes, *Raun* of the Danes, *Raven* of the English, *Corbie* of the Scotch, *Cigfran* of the antient British, *Kaw-kaw-gew* of the Cree Indians, and *Toolloo-ak* of the Esquimaux. Dr. Richardson says that it abounds in the fur countries, and visits the remotest islands of the Polar seas. 'It frequents the barren grounds even in the most intense winter colds, its movements being directed in a great measure by those of the herds of rein-deer, musk-oxen, and bison, which it follows, ready to assist in devouring such as are killed by beasts of prey or by accident. No sooner has a hunter slaughtered an animal than these birds are seen coming from various quarters to feast on the offal; and considerable numbers constantly attend the fishing stations, where they show equal boldness and rapacity. The experienced native, when he sees from afar a flock of ravens wheeling in small circles, knows that a party of his countrymen, well provided with venison, are encamped on the spot, or that a band of wolves are preying upon the carcase of some of the larger quadrupeds, and pushes on briskly in the certain prospect of having his wants supplied. The thievish habits of a tame raven are well known; but it is remarkable that, inhabiting in a wild state the most secluded and worst peopled districts of America, it should exhibit the same disposition to carry off shining metallic bodies, and other articles, totally unfit either for food or to be used in the construction of its nest. Mr. Kendall, in crossing the height of land which divides the waters that flow towards Hudson's Bay from those which fall into the Arctic sea, saw a raven flying off with something in his claws, pursued by a number of his clamorous companions. The bird being fired at dropped the object of contention, which proved to be the lock of a chest.'

The aptitude of the raven for articulating clearly is generally admitted. Mr. Swainson says, 'One belonging to Mr. Henslow, of St. Alban's, speaks so distinctly, that when first we heard it we were actually deceived in thinking it was a human voice: and there is another at Chatham which has made equal proficiency; for, living in the vicinity of a guard-house, it has more than once turned out the guard, who thought they were called by the sentinel on *duty*.'

Variety.—Dr. Richardson (*Fauna Boreali-Americana*), states that a pied individual was killed on the south branch of the Mackenzie, from a flock of the common sort. Its neck, fore part of the back, and part of the wings were grey; the rest of its plumage black.

Locality.—'This,' writes Dr. Latham, 'is a universal species, found both in the old and new continents; from Greenland to the Cape of Good Hope in the one and from Hudson's Bay to Mexico in the other. It was also met with by our circumnavigators in the Sandwich Isles, and at Owhyhee was held in great estimation.' Its appearance is recorded in the first and second voyage of Parry as occurring within the Arctic circle, and in Franklin's Journal. Several pairs were seen at Melville Island, and Dr. Richardson gives a description of one killed at Fort Franklin in March, 1826.

Captain James Ross (Appendix to Sir John Ross's second voyage, p. 28), speaking of the raven, says, 'This is one of the few birds that are capable of braving the severity of an Arctic winter and of enduring the scorching rays of a tropical sun without any change being produced in its plumage by the extremes of climate. Cuvier and other authors mention that in the north it is frequently found more or less white: we never saw anything corroborative of such an observation. It preserves its plumage and peculiar characteristics unchanged in every quarter of the globe*.'

There are several other European and foreign species. Most of the former are known to every countryman, and the student will find both in the ornithological manuals.

Pica.

Bill entire, with cutting edges, straight or curved, furnished at the base with setaceous feathers, lying forwards. *Tail* very long, graduated. (Vieillot).

The *Picæ*, magpies, feed much in the same manner as the true crows, build their nests in trees, advance on the ground by hopping, are clamorous, learn to articulate words easily, and the European species is renowned for hiding anything shining and portable that pleases its eye. This bird also has been always an object of superstition with the vulgar; and as it may be considered a typical form, we take it as an example.

Pica caudata of Ray, *Corvus Pica* of Linnæus, our common *Magpie*, or *Pianet*, is, there is hardly any doubt, the *κίττα* of the Greeks, the *Pica* of the Latins, *Gazza*, *Regazza*, *Putta*, *Picha*, *Gazuola*, *Gazzara*, *Ghiandura*, *Gaggia*, and *Gaggia domenicana* of the modern Italians, *Pie*, *Jaguette*, *Dame*, and *Agasse* of the French, *Die Elster*, *Die Aelster*, or *Aglaster* of the Germans, *Skade* and *Huus Skade* of the Danes, *Skior* and *Tunfugl* of the Norwegians, *Piogen* of the antient British, *Ootawa-kee-askee* of the Cree Indians, and *Shepecum-meeuck* of the Maskegons.

The magpie is too well known to need description. It is omnivorous, and lays six or seven oblong eggs of a yellowish white, spotted with brown, and cinereous: its nest, well fortified with blackthorn twigs, is a curiosity. The female is rather less than the male, and her tail is shorter.

'This bird,' says Dr. Richardson (*Fauna Boreali-Americana*), so common in Europe, is equally plentiful in the interior prairie lands of America; but it is singular that though it abounds on the shores of Sweden and other maritime parts of the Old World, it is very rare on the Atlantic coasts of America, or near Hudson's Bay: only stray individuals passing to the eastward of the Mississippi or of Lake Winipeg. Mr. Say informs us that it winters on the Missouri, and takes its departure northwards on the 23rd of March. It does not entirely quit the banks of the Saskatchewan even in winter, but is much more frequent in summer. On comparing its eggs with those of the European bird, they are found to be longer and narrower; and though the colours are the same, the blotches are larger and more diffused. The manners of the American bird are precisely the same that we are accustomed to observe in the English one.' Mr. Swainson adds, that he has been able to compare English and Arctic specimens with one from the interior of China, communicated to him by Mr. Gray, and that he cannot perceive the slightest difference whereon to build even the character of a variety, much less of a species. The tails of the Arctic specimens, he observes, are very beautiful.

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* The reader is desired to add the following information to the account of the geographical distribution of the passenger pigeon, *Ectopistes migratoria*, *Columba migratoria* of authors, in the article *Columbidæ*. 'A young male bird flew on board the Victory during a storm, while crossing Baffin's Bay, in lat. 73½ N., on the 31st July, 1829. It has never before been seen beyond the sixty-second degree of latitude; and the circumstance of our having met with it so far to the northward is a singular and interesting fact.' (Captain James Ross, *Appendix*, p. 29.)

Variety.—White.

There are several foreign species. They occur both in the Old and New World.

Dendrocitta.

A genus founded by Mr. Gould, and comprehending *Pica Vagabunda* of Wagler, *Pica Sinensis* of Hardwicke and Gray, and a third species, which Mr. Gould believes to have been hitherto unnoticed.

Generic Character.—*Bill* shorter than the head, cultrated, broad at the base, culmen arched, sides subtumid; *nostrils* basal, partly covered with setaceous feathers. *Wings* moderate: fifth and sixth quills longest. *Tail* elongated, cuneated, the tail-feathers spatulate. *Feet* (tarsi) short and weak; *toes* moderate; *hallux* strong, with a strong incurvated claw.

Generic Type.

Dendrocitta leucogastra. Black; occiput, neck, transverse stripe at the base of the quills, and abdomen white; scapulars, interscapular region *(interscapulio)*, and lower tail-coverts tinged with chestnut *(dilutè castaneis)*; two internal tail-feathers ash-coloured, except at their tips.

'The shortness and comparative feebleness of the tarsi in *Dendrocitta*, and its more elongated tail, the feathers of which are equally graduated, except the two middle ones, which are much longer than the others, distinguish it from the typical *Picæ*, the common *magpie*, for example. These characters are in accordance with its habit of wandering from tree to tree in search of its food. It is farther distinguished by the form of its bill.'

'All the species yet known are natives of Eastern Asia.' (Gould, *Zool. Proc.*, May 14, 1833.)

Example. *Dendrocitta vagabunda*, *Pica vagabunda*, Wagler. Head, neck, and crest of a smoke colour, or blackish grey; the back light cinnamon; the centre of the wings grey; the quills black; the tail grey, each feather being tipped largely with black; under surface pale tawny; beak and tarsi black. Length 16½ inches; beak 1¼; tarsi 1½; tail 10. The species is more widely diffused than any of its congeners, being found in considerable abundance all over India. (Gould, *Century of Birds from the Himalaya Mountains.*)

Garrulus.

Bill moderate, straight, with cutting edges, inclined, and with obscure notches near the point. *Tail* even, sometimes rounded. (Vieillot).

The jays are inhabitants of the wooded districts, and live chiefly upon fruits, principally acorns and such vegetable productions. They rarely come into the open country, but make great havoc in gardens and cultivated grounds in the neighbourhood of woodlands. Their food is much less varied than that of the true crows; but they may still be styled omnivorous. Their plumage is generally gay, and even brilliant: the beautiful speculum on the wing is a leading character. The manners of the foreign species are analogous to those of the foreign magpies. Those of the common jay and its aptness at imitation are well known.

Example, *Garrulus glandarius*, the common jay, which is supposed by Belon to be the Μαλακοκρανεὺς (Malacocraneus) of Aristotle; and we may observe, in confirmation of this opinion, that the editor of the last edition of Pennant says, that the bird is very common in Greece, where it still retains its antient name, Μαλακοκρανεὺς. Belon states it to be the *Gaza Ghiandaia*, or *Ghiandara*, the *Gaza verla* and the *Berta* of the modern Italians; and C. Bonaparte gives *Ghiandaja*, *Pica*, *Pica ghiandaja*, and *Pica palombina* as its Italian appellations. It is the *Jay* and *Geai* of the French, the *Eichen-heher* (oak-jay), *Holtzschryer* (wood-cryer), or *Holzcher* of the Germans, and *Screch y Coed* of the antient British.

The jay is too well known to require description. It builds its basket-like nest in trees or high coppice wood and hedges, and lays five or six eggs of a dull whitish olive, mottled very obscurely with pale brown; towards the large end there are usually two or three black lines. It is a sad enemy to gardeners; fruits, especially cherries, and peas, are its great favourites, and it is frequently taken by springes set upon the rows of peas when in bearing. Dr. Kramer says that it will kill small birds. With regard to their imitative powers, Bewick says, 'We have heard one imitate the sound made by the action of a saw so exactly, that though it was on a Sunday, we could hardly be persuaded that the person who kept it had not a carpenter at work in the house. Another, at the approach of cattle, had learned to hound a cur dog upon them, by whistling and calling upon him by his name. At last, during a severe frost, the dog was, by that means, excited to attack a cow big with calf, when the poor animal fell on the ice, and was much hurt; the jay was complained of as a nuisance, and its owner was obliged to destroy it.'

Varieties.—Dr. Latham says he has seen two varieties; the one pure white, the other as in the common jay, but having the whole of the quills white.

Locality.—The author last quoted states that this species, though not nearly so far spread as the magpie, exists in various parts of the continent of Europe, and that he has observed it among drawings done in China.

There are several foreign species, both of the New and Old World. Mr. Gould, who figures three species in his 'Century of Birds,' well observes that, 'The close affinity which the *Garrulus lanceolatus* bears to some species inhabiting the United States and Mexico is worthy of remark, as a corroboration of the fact so often insisted on, that similar forms of ornithology are found in countries widely separated from each other, whose temperatures are alike.' Indeed, the last-mentioned bird immediately reminds the observer of the *blue jay* (*Garrulus cristatus*) of America, while *Garrulus bispecularis* recalls the common jay to his recollection.

Picathartes.

A genus founded by M. Lesson, who takes for the type the *Pie chauve* (*Corvus gymnocephalus*) of Temminck.

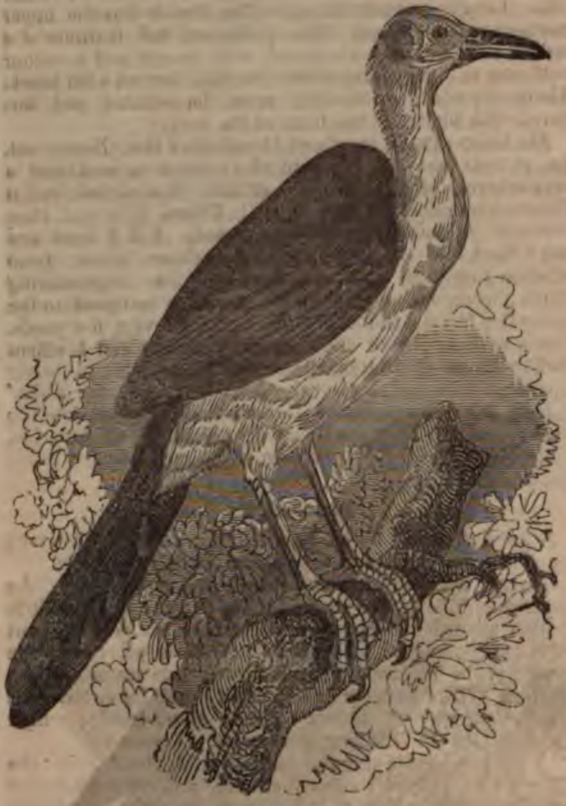
Generic character.—*Bill* convex, not very robust, the upper mandible higher than the lower; the latter a little swollen towards its extremity; the base entirely without hairs and furnished with a cere. *Nostrils* placed on the middle of the bill, oval, open, hollowed into an oblong excavation. *Head* entirely naked. *Feet* (tarsi) long, but little scutellated in front, naked behind; *claws* feeble; *wings* rounded, short. *Tail* long, graduated. (Lesson.)

'The form of this singular bird,' says M. Temminck, 'the cut of its wings, and its long, conical, and very graduated tail, serve me as indicia to judge by analogy of what country it may be a native, its locality being unknown. In fact, on comparing our new species with the *Piapic* of Le Vaillant (*Corvus Senegalensis*), one is inclined, from the marked analogy, to conclude Africa to be its country. Some data, which it is nevertheless not prudent to trust, lead me to believe that the only individual known, which is in the collection of Mr. Leadbeater of London, was brought from the English possessions on the coast of Guinea.'

'Proportions (taille) a little stronger, tarsi much longer, and a tail less in proportion distinguish our bird from the *Piapic*. The head in certain points offers some resemblance to that of the *Gracula calva* of the Philippines, and this approximation is so strong that it would produce doubts as to its African origin, if it did not bear a greater resemblance in its general contour to the *Piapic* of Africa. In fine, if this bird is not African, it can only be a native of the Philippine islands.'

Upon this passage M. Lesson remarks, that he does not find the least analogy between the figure of the Enlum, 538, which is the *Corvus Senegalensis*, and the *Pie chauve*, which more resembles a *Cathartes*. The conclusion stated in M. Temminck's last sentence M. Lesson is far from admitting.

The following is Temminck's description of the species: 'The naked parts of the head offer a particular character. The whole of the auditory meatus is completely destitute of feathers and even of hairs. A small border, or rudiment of membrane, forms, below the orifice of the ear, a sort of external concha, but little apparent, it is true, in the stuffed specimen, but the extent of which must be remarkable in the living bird. All this part of the organ of hearing, as well as a part of each side of the occiput, are covered by a black skin with a slightly-projecting orbicular border, and forming a rounded *plaque*. The cere which envelopes the base of the bill is also black. All the rest of the naked parts of the head, the mesial line of the occiput which separates the black *plaques* of the temples, and the upper part of the top of the neck, appear to me to have been red or rosy in the living subject; a slight tint of rosy-yellow covers these parts in that before us. The whole of the nape is covered, clearly, by a whitish and very short down. The front of the neck and all the other parts are white. The back, well covered with thick-set feathers, is of an ashy-black; all the rest of the plumage is bistre brown. The feet are yellow, and the bill is black. Length 15 inches.' (Temm.)



[Picathartes gymnocephalus.]

Podoces.

This genus was founded by M. Fischer, for a bird discovered by Dr. Pander, in the country of the Kirguis beyond Oremburg, whose habits of life are analogous to those of the crows, among which M. Lesson thinks it ought to be placed.

Generic character.—*Bill* moderate, of the length of the head, bending downwards at its point, without a notch, and slightly angular, the upper mandible shorter than the lower, receiving and covering the edges of it. *Nostrils* basal, rounded, large, covered with setaceous overhanging feathers (plumes setacées retombantes). *Feet* robust and long; *claws* triangular, very much pointed, and but little curved; a warty membrane bordering the thickness of the phalanges. *First quill* short, *second* long, the *three next* equal. *Tail* rectilinear. (Fischer.)

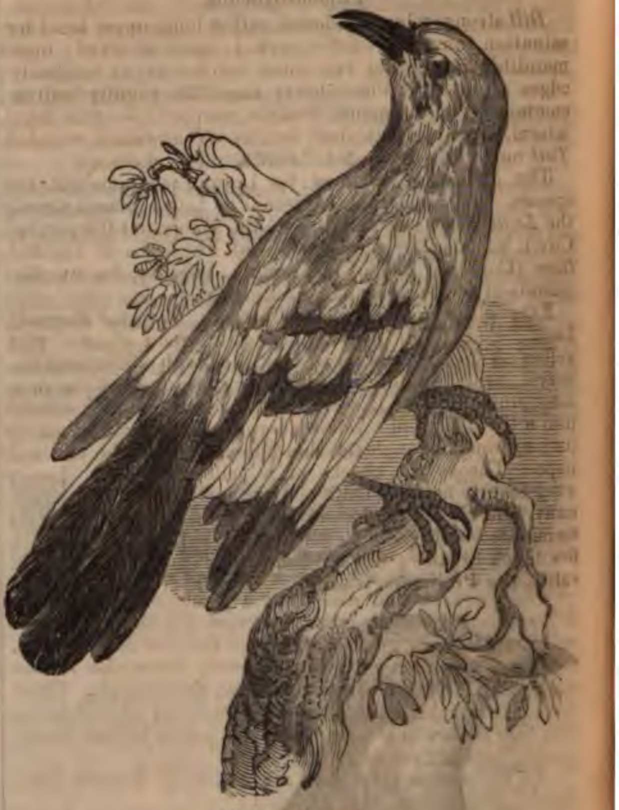
Example, *Podoces Panderi.* Greenish glaucous above; eyebrows white; bill and claws blackish; feet greenish.

The bird flies badly but walks very well. It lives in flocks.

Myophonus.

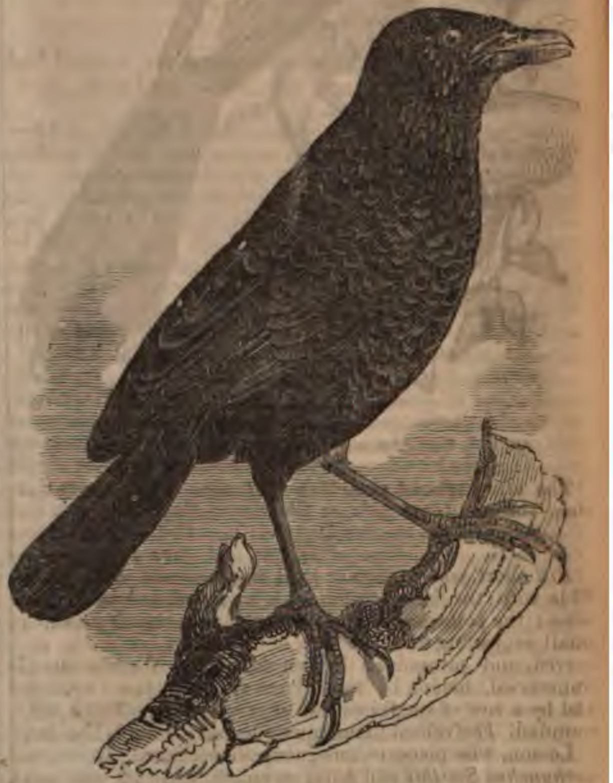
Bill very large, strong and hard, furnished at its opening with some stiff bristles and small feathers turned forwards. *Nasal fossæ* sub-oval, closed by a large membrane. *Wings* rounded, moderate. *Quills* nearly equal, the third longest. *Feet* very long, demiscutellated. *Tail* rounded.

There are several species, all oriental. Mr. Gould, who has published two, viz.: *Myophonus Horsfieldii* and *M. Temminckii*, in his 'Century,' states that, as regards the habits of these birds, little can be said with certainty, but that from their lengthened tarsi and general structure they may be considered as depending in a great measure for their subsistence upon worms, insects, and larvæ. The manners of *M. Temminckii*, when on the ground, are said much to resemble those of the English blackbird. It may be questionable whether this group is properly placed among the *Corvidæ.*



[Podoces Panderi.]

Example, *Myophonus flavirostris* (*metallicus*, Temm.) Entirely of a deep blue-black with metallic tints. *Bill* of a beautiful yellow. *Feet* black. Locality, Java.



[Myophonus flavirostris.]

Ptilonorhynchus.

trong, robust, widened, rather long, upper basal ter-
n convex but little marked; point recurved; upper
le presenting two small notches at its extremity;
little swollen; lower mandible slightly convex;
sure of the mouth straight, simple. *Nostrils* basal,
furnished with short bristles. *Wings* short, rounded.
derate, graduated. *Feet* slender. (Lesson).
genus, as modified by Lesson, contains but two
He thinks that it would be better placed among
tirostres at the side of the *Choucaris* (Graucalus,
ut he allows that it has all the forms of the *Rol-*
oracias) and of the *crows*. Locality, the warmest
of the West Indian Archipelago.
ple, *Ptilonorhynchus Sinensis, Coracias Sinensis,*
Body above pale aqua-marine green clouded with
h-green. Forehead furnished with silky round fea-
rned in different directions; feathers of the nape
ravelled as it were, and capable of being erected
ft—both of a yellowish-green. A black band taking
rom the angle of the bill surrounds the eye and
Throat and cheeks of a yellowish-green. Lesser
erts brown. Quills brown, inclining to olive exter-
d chestnut internally; the three last progressively
ed with greenish white. Bill red, surrounded by a
k bristles; feet reddish. Size eleven inches. Lo-
e Philippine islands.

[Ptilonorhynchus Sinensis.]

her species, according to Lesson, is *Kitta thalas-*
nm.

Kitta.

ort, convex, compressed on the sides; upper man-
h the basal termination recurved, and depressed
e point sharp and furnished on each side with a
jecting tooth, borders of the mandibles thick, re-
nd covered at the commissure. *Nostrils* basal,
al, hidden by the silky feathers of the forehead,
row of small bristles. *Wings* pointed. *Tail* equal,
Feet robust; toes equal; *hallux* strong. (Lesson.)
, who places in this genus *Kitta holosericea, Ptilo-*
us Smithii and *Kitta virescens*, says that what was
as to the last-mentioned genus is applicable to
this, which has the general characters of the *Rolliers* and *Rolles* (Colaris).

The birds composing the genus are exclusively peculiar to New Holland and the temperate zone. (Lesson.)

Example, *Kitta holosericea*, Temm.; *Ptilonorhynchus holosericeus*, Kuhl; *Satin Grakle*, Latham; *Ptilonorhynchus Mac-Leayii*, Latham MSS., Vigors and Horsfield.

Male, very brilliant blackish-blue. Quills and tail-feathers dead black. Bill and feet yellow. A double row of silky and velvety bluish-black feathers at the base of the bill. Length thirteen inches. The *female* has the upper parts of an olive-green. The quills and tail feathers of a red-brown; wing coverts varied with brown and a colour inclining to olive; lower parts greenish, barred with black. There are whitish horizontal spots, lanceolated and bordered with black, on the front of the neck.

Mr. Caley says (Vigors and Horsfield, *Linn. Trans.*, vol. xv., p. 264) that 'the male of this species is reckoned a very scarce bird, and is highly valued. The natives call it *Cowry*, the colonists *Satin Bird*. I have now and then met with a solitary bird of this species: but I once saw large flocks of them on some newly-sown wheat, from whence they fled, on being scared, into a neighbouring brush; when all was again quiet they soon returned to the wheat. They did not leave the brush above a few yards. There were no black ones among them, nor can I affirm that they were feeding on the wheat.

[Kitta holosericea.]

Nucifraga.

Bill long, thick, with cutting edges terminating in a blunt point, furnished with setaceous feathers at the base, the upper mandible longer than the lower. *Nostrils* round, open. *Wings* pointed; fourth quill longest.

Till the publication of Mr. Gould's *Nucifraga hemispila*, (see 'Century of Birds,') but one species was known, viz., that which we select as the example.

The *Nutcracker*, *Nucifraga Caryocatactes*, Brisson; *Caryocatactes nucifraga*, Nils. *Corvus Caryocatactes*, Lin., is the *Casse-noix* of the French, the *Tannenheher* of the Germans, the *Noddekrige* of the Danes, the *Not-kraake* of the Norwegians, and the *Aderyn y cnau* of the antient British.

Description.—Somewhat less than the jackdaw; the bill straight, strong, and black. Head, neck, breast and body, rusty brown. Crown of the head and rump plain, the other parts marked with triangular white spots. Wings black. Coverts spotted like the body. Tail rounded at the end, black, tipped with white. Legs dusky. Locality, most parts of Europe: but C. Bonaparte does not notice it in his 'Specchio Comparativo.'

Pyrrhocorax.

Bill moderate, compressed, subulate, rather slender, furnished at the base with feathers directed forwards, and at the extremity of the upper mandible with two small teeth which are often wanting. *Nostrils*, basal, ovöid, open, hidden by bristles. *Feet* robust, claws strong and recurved. *Fourth* and *fifth quills* longest.

These birds, the *Choquards* of the French, live in troops like the jackdaws, which they resemble in their manners. They inhabit the high mountains of Europe, and especially the snowy regions of the Alps. They are omnivorous, feeding on insects, worms, soft fruits and seeds. They moult once a year, and the sexes are alike externally.

Example. *Pyrrhocorax Pyrrhocorax*. Brilliant black, but the colour is dull in youth, and the bill and feet are black. In the adult bird the black presents iridescent and changeable tints varying to greenish, the bill is yellowish, and the feet bright red. The female lays four white eggs, spotted with dirty yellow; the nest is in holes of the rocks. Locality, Alps of Switzerland. C. Bonaparte ('Specchio Comparativo') notes it as rare, and as only occurring in the Apennines.

Fregilus.

Bill longer than the head, slender, entire, arched, pointed. *Nostrils* covered with feathers directed forwards.

M. Lesson is of opinion that this genus ought to be united with the last, from which it only differs in having the bill longer and more curved, which made Cuvier place it in the tribe of *Tenuirostres* near the *Hoopoes* (Upupa). The species have the manners, habits, and general organization of the crows. And the European species (selected here as an example) perfectly resembles Pyrrhocorax. (Lesson.)

Pyrrhocorax graculus, Temm. *Corvus graculus*, Linn. The *Cornish Chough*, or *Red-legged Crow*, is considered by Belon, on no bad grounds, to be the Κορακιας (Corakias), the Κορώνη φοινικόρυγκος (Red-billed Crow) of the Greeks, and the *Pyrrhocorax* of the Latins; *Spelvier*, *Taccola*, *Pason*, *Zorl*, of the modern Italians (Belon); *Choucas aux pieds et bec rouge*, *Choquar*, *Choüette rouge* of the French (Belon); *Stein-tahen* and *Stein-frae* of the Germans, and *Brân big gôch* of the antient British.

Back beautifully glossed with blue and purple. Legs and bill bright orange, inclining to red. Tongue almost as long as the bill, and a little cloven. Claws large, hooked, and black. The chough builds its nest in high cliffs or ruined towers, and lays four or five eggs, white, spotted with dirty yellow or light brown and ash colour.

Locality.—In Britain: Devonshire, Cornwall, and Wales. Pennant says that it is found in different parts of Scotland, as far as Straithnavern, and in some of the Hebrides. He also states that it is found in small numbers on Dover cliff, where they came by accident; a gentleman in that neighbourhood had a pair sent as a present from Cornwall, which escaped and stocked those rocks. They sometimes desert the place for a week or ten days at a time, and repeat it several times in the year. Montagu, speaking of this locality, says, 'We believe the breed in those parts is again lost.' Dr. Latham states that it is also said to frequent the South Downs about Beachy Head and Eastbourne, where it is called the Red-billed Jackdaw. With regard to its general geographical distribution, Pennant observes that we do not find it in other parts of Europe except England and the Alps. In Asia the island of Candia produces it. In Africa, Egypt; which last place it visits towards the end of the inundations of the Nile. He quotes Pliny, Brisson, Belon, and Hasselquist, for these statements. The editor of the last edition of Pennant says that the chough inhabits the lofty cliffs about the mid region of the highest mountains of Greece, but never the maritime parts as with us. Scopoli speaks of it in Carniola, and says that the feet of some during autumn turn black. These were probably young birds.

The Cornish chough is easily tamed, and may be taught to speak. One in Colonel Montagu's possession would stand quietly for hours to be soothed and caressed, but would resent an affront both with bill and claws. 'It is,' says Pennant, 'active, restless, and thieving; much taken with glitter, and so meddling as not to be trusted where things of consequence lie. It is very apt to catch up bits of lighted sticks, so that there are instances of houses being set on fire by its means; which is the reason that Camden calls it *incendiaria avis*.' Several of the Welsh and Cornish families bear this bird in their coat of arms.

There are foreign species, *Fregilus leucopterus*, Vigors and Horsfield, *Pyrrhocorax leucopterus*, Temm., from New Holland, where it is called by the natives Waybung, according to Mr. Caley, and *Fregilus Enca*, of Horsfield, from Java, for instance.

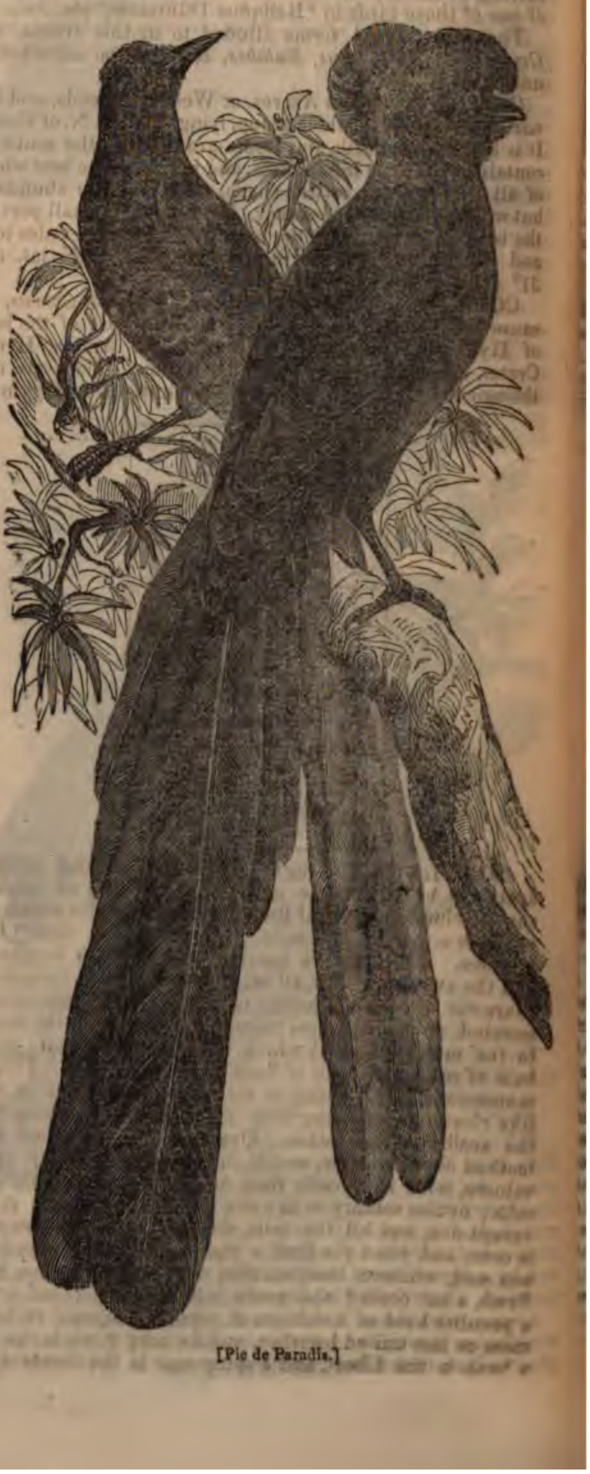
Paradisea.

[See BIRD OF PARADISE.]

Astrapia.

Bill smooth at the base, compressed laterally, straight above, pointed, notched and bent towards the extremity. *Tail* very long and very graduated.

A genus founded by M. Vieillot for a bird of the most brilliant plumage, which, with other characters, places it near the *Birds of Paradise*, while it has several points which would lead to arranging it among the *Thrushes*. Thus Gmelin gave it the name of *Paradisea nigra*, and Latham that of *Paradisea gularis*, while Cuvier considered it to



[Pie de Paradis.]

come under the genus *Turdus* (*Merle de la Nouvelle Guinée*). This beautiful bird is the *Pie de Paradis* or *Incomparable* of the French. M. Lesson says, 'I brought from New Guinea two individuals of this magnificent bird, the value of which is sufficiently considerable in France, and which seems to be very rare even in its native country; for during our sojourn at the Moluccas and the land of the Papous, I only saw there two birds, and one of these now embellishes the galleries of the museum where I deposited it.'

No description can convey any idea of the brilliancy of this bird. The metallic tints of almost every hue, varying with the play of the light on the plumage, almost surpass belief. It is well figured in Le Vaillant's 'Oiseaux de Paradis,' pl. 20 and 21; but no colouring can give the slightest notion of its splendid intensity and variety. The form may be imagined from the annexed cut taken from the plates above mentioned.

Fossil Corvidæ.

Dr. Buckland mentions the remains of the raven as occurring in the cave at Kirkdale, and figures the right ulna of one of those birds in 'Reliquiæ Diluvianæ,' plate xi.

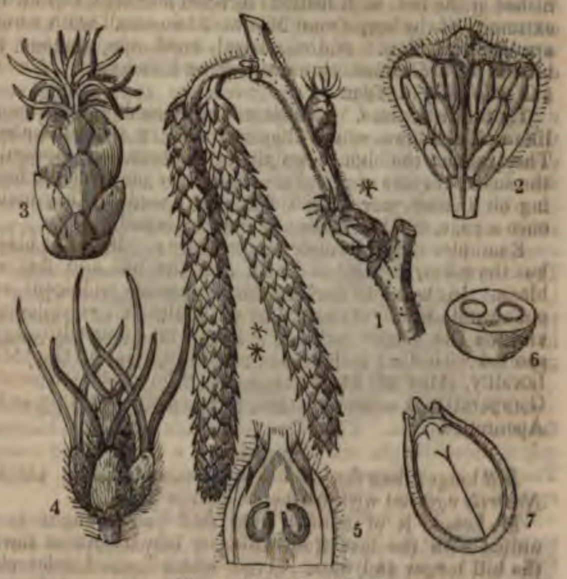
The other allied forms alluded to in this article, viz. *Crypsirina*, *Epimachus*, *Eulabes*, &c., will be adverted to under those titles.

CORVO, one of the Azores, or Western Islands, and the northernmost of the whole group, lying 10 miles N. of Flores. It is high to the north, and slopes gradually to the south; it contains about 750 inhabitants, and produces the best wheat of all the Azores; cattle, sheep, and hogs are abundant, but wood and water are scanty. It has only a small port for the boats trading among the islands. It is three miles long and two broad. The north point is in 39° 44′ N. lat., and 31° 6′ W. long.

CORVUS, the Crow, sometimes *Hydra et Corvus*, because this constellation, in fact, contains a part of the body of Hydra, on which the bird rests. In Aratus, Hydra, Crater, and Corvus form one constellation. There are mythological stories, apparently not very antient, in Hyginus.

Character.	No. in Catalogue of		Magnitude.
	Flamsteed. Piazzi.()	Astron. Society.	
α	1	1396	4
ε	2	1398	4
	3	1400	6
γ	4	1408	3
ζ	5	1418	5
(ι)	6	1424	6
δ	7	1437	3
η	8	1444	5
β	9	1448	3
	(54)	1420	6

CORYLA'CEÆ, a highly important natural order of apetalous or incomplete exogens, consisting of trees or shrubs, chiefly natives of the colder parts of the world, and valuable either for the nuts they bear or the timber they produce. The oak, the beech, the hazel, the hornbeam, and the sweet chestnut, all belong to this order, the general character of which is briefly this: leaves alternate, usually serrated, often with veins running straight from the midrib to the margin, beyond which they slightly project; at the base of each leaf a pair of membranous stipules. Flowers monœcious. The males in catkins; the females in bud-like clusters. Stamens from five to twenty, arising from the scales of the catkin. Ovary inferior, crowned by a toothed obsolete calyx, seated in a membranous cup or involucre, with more cells than one, and as many styles as cells; ovules solitary or in pairs, pendulous; all the ovules except one, and all the cells, disappear after the flowering is over, and when the fruit is ripe there is but one cell and one seed, whatever their number may originally have been. Fruit, a nut (called also acorn, mast, &c.), enclosed within a peculiar kind of involucre or *cupule*, composed of bracts more or less united together, and forming a cup in the oak, a husk in the filbert, and a spiny case in the chestnut and beech. The seed consists of a roundish embryo, with thick fleshy cotyledons, and no albumen. For particulars concerning the important genera of this order, see Quercus, Fagus, Carpinus, Castanea, Ostrya, Corylus. This order is also called Cupuliferæ.



[Flowers of the Hazel Nut.]

1, a branch, with the male flowers ** in drooping catkins; the females * in bud-like clusters. 2, one of the scales of the male catkin, with the stamens attached to it. 3, a female bud, with the styles projecting beyond the bracts. 4, the young ovaries with the bracts removed. 5, a section of the ovary, exhibiting the ovules, the toothed calyx, and the base of the style. 6, a cross section of the ovary. 7, a longitudinal section of a nut.

CO'RYLUS, the genus of plants after which the natural order Corylaceæ receives its name. It consists of the different species of hazel-nut, and is distinguished from the genera associated with it by its cupule being a two-leaved lacerated husk, and its ovary having but two cells, in each of which is one ovule. The species are the following:—

1. *C. avellana*, the common hazel-nut. This plant, which is a native of all the cooler parts of Europe, Northern Asia, and North America, is the parent of the many varieties of nuts and filberts now cultivated for their fruit. [Hazel-Nut, Filbert.] It is specifically known by its husks being hispid with glands, leafy, broad, much lacerated, and rather spreading at the point; never contracted into a long tube, nor divided into narrow rigid segments; by its roundish, heart-shaped, very rugose, angular, toothed, cuspidate leaves, glandular-hispid branches, and shrubby habit. It varies very much in the form of its husks, in the degree of their hispidity, some being nearly smooth, in the shape of the nuts, and in the height to which it grows. In the hazel-nut the husk is open at the point, shorter, or at least but little longer than the nut, and nearly smooth; while in the filbert (*Corylus tubulosa* of some writers), it is lengthened considerably beyond the nut, and covered more or less with glandular hairs; all degrees of intermediate structure may be found in the cultivated varieties. The *C. Americana* of botanists is not distinguishable even as a variety. There is a pretty purple-leaved kind in shrubberies.

2. *C. rostrata*, the horned hazel-nut. In this the branches are quite free from glandular hispidity, the leaves are oblong, not cordate, doubly toothed, and acuminate, and the husks globular over the nuts, where they are extremely hispid, without ever being glandular; beyond the nuts the husks are contracted into a tube an inch or more long, and irregularly lacerated at the point. A very distinct species inhabiting the mountains of the Carolinas, where it rarely exceeds three or four feet in height. In gardens it is scarcely larger.

3. *C. colurna*, the Constantinople nut. A white-barked tree, twenty feet and more high, with an erect trunk and a dense spreading head. The leaves are shining, much less rugose than in the the hazel-nut, cordate, angular, serrated, acute or acuminate, slightly hairy on the under surface. The branches and all the other parts are destitute of glands; the husks are campanulate, deeply cut into narrow hairy rather falcate segments. The nuts are roundish and very

hard. A native of Asia Minor, and known from all the other garden species by its becoming a tree. It seldom produces its nuts in this climate.

Besides these, there are the *C. lacera* and *C. ferox*, two species found in the Himalaya mountains. Of these, the former, gathered in Kumaon, is hardly different from *C. colurna;* the other, from Mount Sheopore, has narrow taper-pointed leaves, and excessively hard nuts, enclosed in a husk, with divaricating narrow spiny divisions.

CORYMB, a form of inflorescence approaching very nearly to the raceme. The raceme consists of an axis, upon which all the flowers are disposed upon footstalks of the same length; and hence its figure is more or less cylindrical. A corymb consists of an axis, the lowermost flowers on which have very long stalks, and the uppermost very short ones, so that the mass of inflorescence is an inverted cone, as in candytuft and many other cruciferous plants. The corymb is, in fact, an umbel with a lengthened axis.

From this word is derived the term *corymbose*, which is applied not only to flowers, but to any kind of branching in which the lowermost parts are very long and the uppermost very short, as is the case in most species of Aster.

CORYMBI'FERÆ. [COMPOSITÆ.]

CO'RYPHA, a genus of East India palms, with gigantic fan-shaped leaves. Their flowers consist of a three-toothed calyx, three petals, six stamens, and a three-celled ovary. The fruit is composed of round one-seeded berries. Of the species two in particular deserve mention.

One, the Tara or Talliera, *Corypha talliera*, is an elegant stately species inhabiting Bengal. Its trunk is about thirty feet high, and as nearly as possible of equal thickness throughout. The leaves are in about eighty divisions, each six feet long by four inches broad, radiating from the point of a leaf-stalk from five to ten feet long, and covered with strong spines at its edge. Roxburgh describes the spadix as decompound, issuing in the month of February from the apex of the tree and centre of the leaves, forming an immense diffuse ovate panicle, of about twenty or more feet in height. The fruit is the size of a crab-apple, wrinkled, dark olive, or greenish-yellow. The leaves are used by the natives of India to write upon with their steel stiles, and for other purposes.

The other, the Tala or Talipat palm, *Corypha umbraculifera*, is a native of Ceylon, and similar in appearance; but its leaves are not so round as those of the Talliera, the divisions in the centre being shorter than those at the sides. The trunk grows sixty or seventy feet high; the leaves are fourteen feet broad and eighteen long, exclusive of this stalk, and they form a head about forty feet in diameter. Fans of enormous size are manufactured from this plant in Ceylon; the pith of its trunk furnishes a sort of flour from which bread is made; the leaves make excellent thatch, and are used for writing on like those of the Talliera.

CORYPHÆNA (Linnæus), a genus of fishes of the section Acanthopterygii and family Scombridæ.

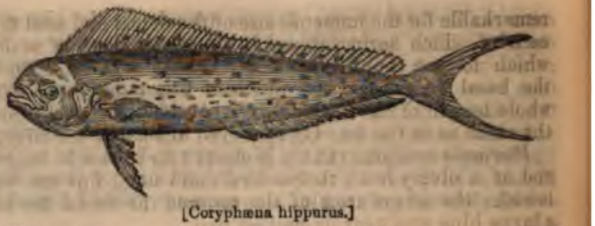
The group of fishes formerly included under the head Coryphæna is now subdivided, and the subdivisions may be either termed subgenera of the genus Coryphæna, or the group may be looked upon as a sub-family, and the subdivisions as genera. The principal characters of this group are as follows:—Body elongated, compressed, covered with small scales; dorsal fin extending the whole length of the back (or nearly so); branchiostegous rays generally seven in number. These fishes have commonly a long anal fin, in some extending from the tail almost to the ventral. The tail is more or less forked, and the pectoral fin is usually arched above and pointed.

Considering Coryphæna as a genus, the following are the subgenera:—*Coryphæna* (proper), *Caranxomorus*, *Centrolophus*, *Astrodermus*, and *Pteraclis*.

The species to which the name Coryphæna is now restricted have the head much elevated, and the palate and jaws both furnished with teeth.

These fishes are very rapid in their motions, usually of large size, and they prey upon the flying-fish.

Coryphæna hippurus (Linn.), a species not uncommon in the Mediterranean, is about two feet in length, of a blueish lead colour above and pale yellow beneath. There are dark blue spots on the back and dorsal fin, and the under parts of the body are furnished with spots of a paler colour. The ventral fins are yellowish beneath and black above, and the anal fin is yellowish. The greatest depth of the body is about one-sixth of the whole length.



[Coryphæna hippurus.]

There are several other species of this genus, some of which are found in the Mediterranean, and very closely resemble the one just described.

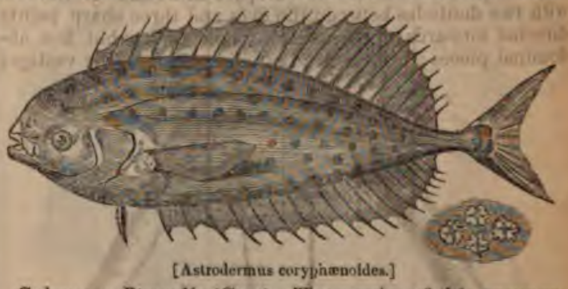
The genus *Caranxomorus* (Lacépède) is closely allied to Coryphæna (proper); the species, however, may be distinguished by their having the head less elevated and the eye in a medial position; the dorsal fin is shallow and of equal height throughout: the tail is much forked.

Caranxomorus pelagicus is about nine or ten inches in length, of a blueish colour above and yellowish beneath; the dorsal and anal fins are of the same colour as the back of the fish, and have a whitish margin. It inhabits the Mediterranean.

The subgenus *Centrolophus* has already been noticed under the proper head. We will merely remark that the species of this genus which we have seen have the body shorter in proportion than in either of the two preceding genera, and of a somewhat elongate-oval form, the tail less forked, &c.

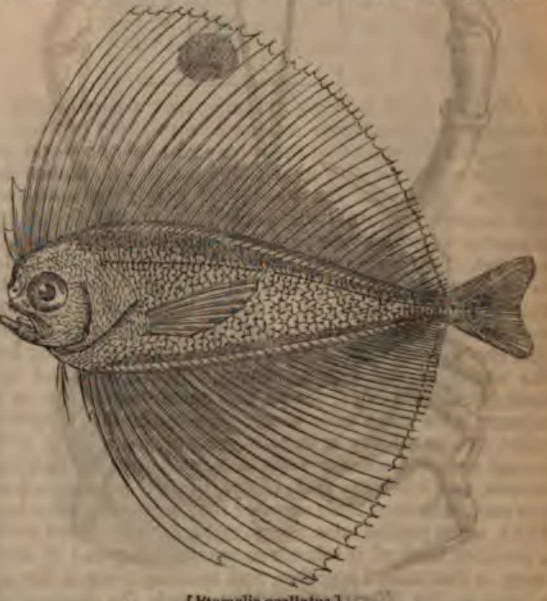
Subgenus *Astrodermus* (Bonnelli). But one species of this subgenus is known. The generic characters are:—head elevated, mouth but slightly cleft; dorsal fin extending nearly the whole length of the body; ventral fins very small, and placed on the throat; branchiostegous rays four.

Astrodermus Coryphænoides (Cuv.) is from twelve to fifteen inches in length, and of a pale rose colour, with five or six longitudinal rows of round black spots; the dorsal and anal fins are blackish, and the pectoral and caudal fins are of a red hue. The most remarkable character of this fish, however, consists in the scales, which, instead of folding over each other in the usual way, are scattered over the body and head; they are very minute and serrated, and, under a lens resemble small stars. It inhabits the Mediterranean.



[Astrodermus coryphænoides.]

Subgenus *Pteraclis* (Cuv.) The species of this group are



[Pteraclis ocellatus.]

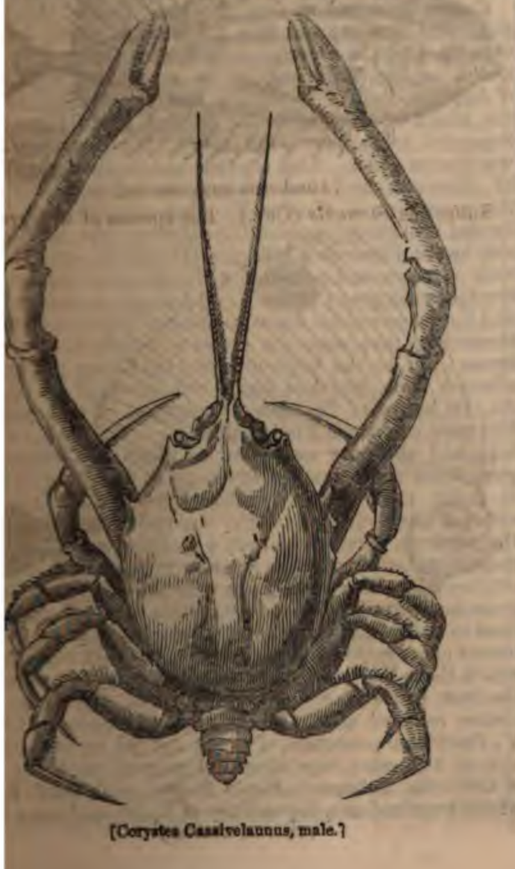
able for the immense size of the dorsal and anal fins,
which springs from between two tiers of scales,
form a protection, and probably give strength to
al portion of the fin-rays. These fins extend the
ength of the body; the head and teeth are nearly
e as in the true Coryphænæ; the scales are large.
clis ocellatus (Cuv.), is about four inches in length,
a silvery hue; the pectoral and caudal fins are yel-
the others are blueish grey, and the dorsal fin has
blue spot near its highest part.

YPHÆUS. [Chorus.]

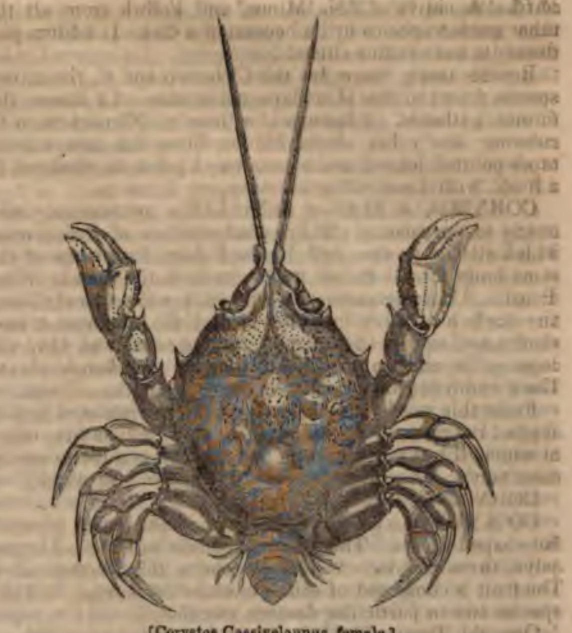
YSTES, a genus of brachyurous or short-tailed
ans. Exterior *antennæ* longer than the body, seta-
ith two rows of cilia. *Jaw-feet* (pieds-machoires)
their third joint longer than the second, straight,
ted by an obtuse point, with a notch upon its inter-
ler. *Eyes* rather distant, borne upon large pedun-
hich are nearly cylindrical, and somewhat short.
r feet (chelæ) large, equal, twice as long as the
d nearly cylindrical in the males; in the females,
the length of the body, and compressed, especially
the *hand* (manus). *The other feet* terminated by
gated nail or claw, which is straight, pointed, and
led longitudinally. *Carapace* oblong-oval, termi-
a rostrum anteriorly truncated and bordered pos-
The *regions* but slightly indicated, with the ex-
of the *cordial region*, the *branchial* or *lateral re-*
ing very much elongated.

esmarest is of opinion that the natural relations of
ustacean approximate it to *Atelecyclus*, *Thia*, and
a, of which M. Latreille forms his orbicular tribe
rbiculaires). Dr. Leach, he adds, in his method,
them near the first two of the above-mentioned
solely because they have the same number of abdo-
rticulations. The *Leucosiæ*, in which the number
articulations is less considerable, are removed to a

ple, *Corystes Cassivelaunus*, Leach; *Corystes den-*
rystes dentatus, *Corystes longimanus* of Latreille,
Cassivelaunus, *Long-clawed Crab* of Pennant,
personatus of Herbst, *Albunea dentata* of Fabricius.
iption.—Surface of carapace somewhat granulous,
o denticles between the eyes and three sharp points
forwards on each side. The male has but five ab-
pieces; but, as M. Latreille observes, the vestiges
of the separation of the two others may be clearly remarked upon the intermediate or third piece, which is the largest of all.



[Corystes Cassivelaunus, male.]



[Corystes Cassivelaunus, female.]

Locality.—The coasts of England and France. The specimens figured by Pennant were dredged up from the deep near Holyhead and Red Wharf, Anglesey.

CORYTHAIX. [Touraco.]

COS (Κῶς), an island in the Archipelago, the modern name of which is Stanco. It lies in the mouth of the gulf of Ceramus; its principal city, which was immediately opposite to Halicarnassus, was destroyed by a great earthquake in the Peloponnesian war. (Thucyd., viii., 41.) This city was, in very antient times, built on the other side of Cape Scandarium, which points up the gulf, and was called Astypalæa (Old-town). The new capital was not large, but well built and picturesquely situated. (Strabo, p. 657.)

Cos must have been colonized from Greece at a very early date. The inhabitants were Greeks even before Homer's time (*Iliad*, ii., 655 and 677; xiv., 2, 6, compare Strabo, pp. 573, 653); the mother-city of this Dorian colony was Epidaurus (Herod. vii., 99), as is indeed sufficiently shewn by the worship of Æsculapius, which prevailed in such a remarkable degree both at Epidaurus and in Cos. (Pausan., iii., 23, § 6.) There was a house of Asclepiadæ at Cos, to which Hippocrates was related, and we are told that he compiled his system of medicine from the tables of cures suspended in the Coan temple of Æsculapius, which was as celebrated in its way as the corresponding one at Epidaurus. (Strabo, pp. 373, 657.) A similarity of origin and religion induced the Coans to form a league with Halicarnassus, Cnidos, and the Rhodian Tripolis; and the confederacy celebrated the Triopian rites on a promontory of that name near Cnidos. (Herod., i., 144.) The constitution of Cos was in all probability originally the same with that of Epidaurus, namely, an aristocracy.

About the year 486 B.C. we find Cadmus, from Messana, reigning in this island by the appointment of the king of Persia; but after ruling a few years he restored the former constitution, and went with Epicharmus, the comic poet, who was a native of Cos, to Messana. (Müller, *Dorians*, i., 8, § 5, note 9.) It seems, however, that the island did not long enjoy the old form of government, for we find it just about this time under the authority of Artemisia. (Herod., vii., 99.) In later times a democracy was established, but it did not last long, for the violence of the demagogues forced those of the better sort to conspire together against them, and put down the republican constitution to which they owed their power. (Aristot. *Pol.*, v., 5.) The wines of Cos were famous throughout Greece. The climate is said to be delightful. (Leake's *Morea*, ii., 429.)

COSECANT, COSINE, &c. [Trigonometry.]

COSENZA. [Calabria.]

COSI, RIVER, rises in the Nepaul hills, near Catmandoo. At first it flows in a south-east direction to the town of Chattra, in 26° 53′ N. lat., and 87° 4′ E. long.; turning then more to the south, it enters the district of Purneah, twenty miles to the north of Nauthpore. Its channel is in this part nearly two miles wide, but, except in the rainy season, presents little else than sand-banks and a succession of small islands. It passes the town of Nauthpore, still running nearly due south, and continues this course until at about 300 miles from its source it joins the Ganges in 25° 25′ N. lat., and 87° 18′ E. long.

CÖSLIN, COESLIN, or KOESLIN, a government circle in the eastern part of the Prussian province of Pomerania. It is bounded on the north by the Baltic, along whose shore it extends for above 100 miles; and on the east by West Prussia. It has an area of about 5428 miles (nearly twice the surface of Lincolnshire); is divided into nine minor circles, and contains 23 towns, 1 market-town, and 1142 villages. The surface is a level, occasionally broken by elevations, and rising into sand-hills near the Baltic. There are considerable woods and forests. Cöslin is watered by the Rega, Persante, Wipper, Stolpe, and numerous other streams; it has several lakes, but none of any considerable dimensions. Agriculture and grazing are the chief pursuits; to these must be added the manufacture of woollens, cottons, ribbons, leather, iron-ware, glass, paper, tobacco, &c. Amber is obtained along the whole coast. The population in 1817 was 244,515, of whom 239,000 were Protestants, 3336 Roman Catholics, and 1585 Jews. In 1831 the number of dwelling-houses was 36,322, and the population had increased to 323,450, and in 1834 to 329,298.

The stock in 1831 consisted of 43,687 horses, 129,681 heads of cattle, and 506,476 sheep and goats. The chief towns, besides Cöslin, the capital, are Stolpe, (6600 inhabitants), Colberg (6300), Rügenwalde (3400), Neustetten (3250), and Belgard (2800).

CÖSLIN (formerly Cholin), the capital of the government circle, and of the principality of Camin, is about five miles from the Baltic, and situated on the banks of the Niesenbecke, or Nesebach, which falls into the Lake of Jasmund. Cöslin lies at the foot of the Gollenberg, from which it is supplied with fresh water by means established in 1734, and is above a mile in length. Cöslin, which is situated in 54° 13′ N. lat., 16° 12° E. long., is well built, surrounded with a wall, and has 4 gates, 3 suburbs, 1 market-place, 1 Lutheran church, 2 chapels, 690 houses, and about 6600 inhabitants: an increase of about 1700 since the year 1817. It was formerly the residence of the bishops of Camin, and is now the seat of provincial administration, and of the superior courts of judicature. It has a gymnasium, and a seminary for educating teachers. The population is chiefly engaged in navigation and commerce, and the manufacture of Russia leather, linens, woollens, and tobacco, as well as in dyeing, brewing, and fishing.

The spacious market-place contains a statue in freestone of Frederick William I., who had the town rebuilt in a regular style after its destruction by a dreadful conflagration on the 11th of October, 1718. On the Gollenberg is a monument commemorative of the Pomeranians who fell in the campaigns of 1813, 1814, and 1815. In the vicinity of Cöslin is the lake of Jasmund, on the banks of which the antient Jomsburg is said to have stood.

COSMO THE ELDER. [Medici.]

COSMO I., duke of Florence, and afterwards grand duke of Tuscany, was the son of Giovanni de' Medici, a celebrated condottiere of the fifteenth century, who was descended in a direct line from Lorenzo, the younger brother of the elder Cosmo. This line formed a collateral branch of the first house of Medici, and its members remained in a private station as wealthy citizens of Florence during the lives of Cosmo, Pietro, Lorenzo the Magnificent, and Leo X., taking little part in the civil broils which agitated the republic under the administration or influence of the elder branch. That branch became extinct by the death, in 1519, of Lorenzo de' Medici, duke of Urbino, the only legitimate grandson of Lorenzo the Magnificent, which was followed soon after by the death of his uncle, Pope Leo X. The duke of Urbino left an illegitimate son, Alessandro, who was made duke of Florence after the surrender of that city to the allied arms of Charles V. and of Pope Clement VII., in 1530. Alessandro was a profligate prince, and after several years of tyranny was murdered by his relative Lorenzino, who belonged to the junior branch of the Medici, in 1537. Upon perpetrating this murder, Lorenzino fled to Venice. The friends and councillors of the late duke, with Guicciardini the historian at their head, proposed to appoint young Cosmo, of the younger branch of the Medici, as successor to Alessandro. Cosmo had against him a number of emigrants, some of the first families of Florence, who were hostile to the Medici, some through jealousy and rival ambition, and others because they wished to re-establish the republic. These emigrants were scattered about the different Italian cities, and were encouraged and supported by Pope Paul III., by Count Pepoli of Bologna, and others. They also relied on the protection of Francis I. of France, while Cosmo on his side was protected by the emperor Charles V., who acknowledged him as duke of Florence. The emigrants, having collected a few thousand men, invaded the Florentine territory, but were defeated by the troops of Cosmo at Montemurlo; and their leaders, Albizzi, Valori, and Filippo Strozzi, were taken prisoners and put to death. From that time Cosmo reigned absolute lord of Florence. He extinguished all remains of popular liberty, and he established a system of inquisitorial police by means of numerous informers. Persons accused of any designs against the government were tortured, and often put to death. He had agents also in various parts of Italy to watch the conduct of the Florentine emigrants, and in some instances to get rid of the most dangerous by assassination or poison, as in the case of Lorenzino, who was murdered at Venice by his order, in 1548. He effected a striking change in the manners of the Florentine people, who were before noted for their garrulity and lightness of conversation; they became henceforth taciturn and cautious, and spoke in half sentences. In other respects the administration of Cosmo was orderly and wise; he was attentive to business, and looked himself into all public affairs. He had considerable abilities; and if he rendered Florence and Tuscany entirely dependent on his will, he at the same time succeeded by consummate political skill in keeping his state independent of all foreign powers. He would be master at home: he freed his towns from the imperial garrisons, and resisted several attempts at encroachment from the court of Rome. He was the first to establish the unity and independence of Tuscany as a political state. He formed a native militia of the peasantry, well exercised and disciplined by experienced officers, so that at three days' notice he could collect 12,000 men in any particular point, besides the regular regiments which he kept in the towns. His finances were in good condition, and his treasury always well supplied with money.

Cosmo possessed at first the territories of the two republics of Florence and Pisa, the latter of which had been conquered by the Florentines before his time. In 1552 he added to his dominions, by an agreement with Jacopo d' Appiano, lord of Piombino, that principality, and also the island of Elba, when he fortified Porto Ferrajo, and improved its harbour. But a more important acquisition was that of Siena. That republic had survived the freedom of Florence, and had retained its independence under the protection of Charles V. But in 1552 civil factions having broken out among the citizens, who were excited also by the Florentine refugees, they drove away the Spanish garrison and admitted a French auxiliary force. In the following year Charles V. sent troops to reduce Siena, and Cosmo joined his forces to those of the emperor. Not succeeding that year, the emperor withdrew most of his troops; but at the beginning of 1554 Cosmo put together a larger force, attacked Siena, and occupied its territory. At the battle of Marciano, in August of that year, the Siennese and their French allies were defeated. After a long and obstinate resistance, in which the women took part, Siena was compelled by famine to surrender to Cosmo in April, 1555. The conditions were not harsh. Siena retained her municipal institutions under the protection of the emperor, who was to keep a garrison in it; but in the mean time Cosmo placed a garrison in it himself. All those citizens who chose to emigrate were at liberty to do so. A great many availed themselves of this stipulation, and retired to the town of Montalcino, where they kept up the semblance of a republic a little longer. Of 40,000 inhabitants which Siena had previous to the siege, only 6000 remained: the rest had either died or emigrated. In July, 1557, Cosmo received of Philip II., who had succeeded Charles V., the formal possession of Siena and its territory, exclusive of the coast near Monte Argentaro, with the ports of Orbitello, Telamone, Santo Stefano and Port' Ercole, which remained as a dependency of Spain, and were afterwards annexed to the crown of Naples under the name of 'Stato de' Presidj.' The Siennese swore allegiance to Cosmo, who left to them their municipal laws and magistrates. In August, 1559, the small residue of the Siennese republic at Montalcino surrendered to Cosmo. All Tuscany was now, for the first time since the fall of the Roman empire, united under one government.

Cosmo married Leonora, the daughter of Don Pedro de Toledo, Spanish viceroy at Naples, and had five sons by her. Two of these, Giovanni, who had been made a cardinal, and Garzia, died suddenly towards the end of 1562, and their mother soon after followed them to the grave. A report was spread and readily believed by the numerous enemies of Cosmo, that Giovanni had been killed by his brother, after which Cosmo, in his wrath, had killed Garzia with his own hand. Alfieri has made this the subject of a tragedy. Probabilities, however, are against the truth of this assertion. (Botta, *Storia d' Italia*, lib. xii.) Cosmo's eldest son, Don Francesco, married the archduchess Joanna, daughter of the emperor Maximilian. In 1569 Pope Pius V., by a solemn bull dated 28th August, conferred upon Cosmo and his successors the title of grand duke of Tuscany, as superior to all dukes and princes, and inferior in rank only to kings. In the following year Cosmo went to Rome to receive his grand ducal crown from the hands of the pope. In his bull the pope set forth the merits of Cosmo towards the Holy See for having entered zealously into the war against the Turks, and founded the military order of St. Stephen, in imitation of that of St. John of Jerusalem, for having given assistance to the king of France against the Huguenots, and having prosecuted the heretics in his own dominions. The Inquisition was established in Tuscany; but Cosmo insisted upon having reports of its proceedings, and that its sentences should not have effect without his approbation. Several, however, suffered death for heresy or blasphemy; one of whom, Pietro Carnesecchi, a Florentine, who was very intimate with Cosmo, and had been repeatedly charged with heresy, being demanded by Pope Pius, was given up by the duke, taken to Rome, and there sentenced to death, and publicly executed in September, 1567.

Cosmo spent the latter years of his life chiefly at one or other of his villas, having entrusted the cares of administration to his son Francesco in 1564. Many things are said of the irregularity of his life in his old age, and his sons Francesco and Pietro were worse than their father in this particular. In 1570 he married Camilla Martelli, a private lady of Florence. Cosmo died 21st April, 1574, in the palace Pitti, which had become the residence of the grand dukes, and was succeeded by his son Francesco.

Cosmo, though an unprincipled man, was a very able statesman. In the general breaking up of most of the Italian independent states in the sixteenth century, he found means to create and consolidate a new and considerable principality, which has remained ever since independent, and he thus saved that fine country Tuscany from becoming a province of Spain, like Naples, Sicily, and Lombardy. He had the firmness to refuse Philip II.'s first offer of Siena as a fief of the Spanish crown, answering, that he was an independent sovereign, and would not make himself the vassal of another. He refused the crown of Corsica, which was offered to him by the insurgents in 1564, because it would have embroiled him with other powers and endangered his own states. Cosmo encouraged the arts and literature. He founded the Florentine Academy, the Academy del Disegno, or of the fine arts; and he restored the University of Pisa. He was the friend of several learned men, among others of Benedetto Varchi, a republican of the old school, who wrote his history under his patronage, and Cosmo was not offended at the freedom of his sentiments. The Medici dynasty founded by Cosmo became extinct in 1737 by the death of the grand duke Gian Gastone. He was succeeded in his sovereignty by Francis duke of Lorraine, the husband of Maria Theresa of Austria. (Botta, *Storia d' Italia*; Galluzzi, *Storia del Gran Ducato di Toscana*; Ammirato, *Istorie Fiorentine*, &c.)

COSMO'GONY, in the proper sense of the term, is the science of the creation of the world. As the creation of the world was not observed by man, and as it is not possible for man to observe the creation of a world, so cosmogony cannot be a science founded on direct experience, but must necessarily be a philosophical science. But though cosmogony belongs to the department of philosophy, yet, as it requires an accumulation of facts and observations to rest on, it must still be classed under the division of practical philosophy. The antients not possessing these facts and observations, cosmogony has only become a science in modern times. The German philosopher Kant has denied the capacity of the human mind to entertain this science.

The doctrine of the creation of the world may be considered in three ways: the inquirer either confines himself to the creation of our earth, and reduces cosmogony to geognosy, geogony, speculative geology, and oryctognosy, (which latter is a science of itself,) or he may merely investigate the creation of celestial bodies, or he may extend his researches to the origin of creative power, and the creation of the elements of matter.

The first of these modes of investigation is pure cosmogony; the second is a union of cosmogony with dynamogony, physiogoy, and speculative chemistry and physics. The antients speculated or dogmatized in both these divisions of the science. Anaximander considered the sun to be only a little larger than the Peloponnesus; Leucippus and Democritus asserted the existence of different kinds of atoms, and that the soul also was composed of atoms. Heraclitus supposed heat to be the primitive element and the omnipotent power. Plato, besides an eternal supreme intelligence, believed in the existence of a primitive and eternal matter, which was divided by the intelligence into the four recognised elements, and vivified by a soul, making the world an animal, with the stars as limbs. Aristotle admitted the elements of Plato, but denied the soul; substituting in its stead individual souls. Epicurus supposed an infinite variety of atoms, which being in constant motion, form bodies by accidentally coming into contact with each other. Empedocles, the most enlightened of these antients peculators, believed that the four elements were not originally individually developed, but were in a state of amalgamation; that, after the developement of the elements, enmity (repulsion) and friendship (attraction) became inherent properties of them, and that the soul was formed of these elements, fire predominating in it. Pythagoras, in consequence of his numeric system, taught a central heat, the existence of ten spheres, the sun, moon, five visible planets, the earth, an opposite earth, and the stars; also a music of the spheres, produced by the harmonic movements of the heavenly bodies. The new Platonic school of Alexandria, under Ammonius. Plotinus and Iamblichus, believed every thing to be an emanation or effusion from a supreme power.

Modern cosmogonists may be divided into two classes; first the dogmatists, as Buffon in his Histoire Naturelle, Wolff in his Cosmologia, Maupertuis in the Essai de Cosmologie, Lambert in the Kosmologische Briefe, Dalberg in the Betrachtungen über Universum, Berger in his Philosophische Darstellung des Weltalls, Des Cartes, Opera Omnia, lately edited by Victor Cousin; and Hollbach in the Système* de la Nature. Secondly, the critical cosmogonists, who conduct their inquiries according to the principles of Kant, as developed in his Allgemeine Naturgeschichte, und Theorie des Himmels; and in detached parts of the philosophical systems of Schelling, Hegel, Herbart, and in the Naturphilosophie of Oken, which contains a complete system of cosmogony, dynamology and physiogoy and in a little work of John Müller, entitled Ueber die Entstehung der Welt aus Nichts, of which, as it is the latest German publication on the subject, we give an abstract.

Müller, after premising that *nothing* cannot be productive of anything, admits the existence of an original governing power, possessed of omnipresence and consciousness, consequently of omnipotence and universal benevolence, but unembodied. From eternity this power designed the formation of the world, which could only be effected in one of two modes, either in a pantheistical or spiritual mode. As in the abstract, or in the world as it is objectively, there exist no limited magnitudes or quantities, but only the infinitely great or infinitely small, out of the amalgamation of which, things limited or measurable proceed, such a power, as before described, could create the world either with his own entire and undivided power, bestowing on it an all-pervading soul, contradistinguished from individual souls, which is the doctrine of Pantheism; or the intelligence has parted with an infinitely small portion of its power, which of itself created the world: this is the doctrine of Spiritualism. This last process this writer considers to have been the case, and asserts that the infinitely small portions of power which the intelligence parted with are what we call time. The continued existence of time not only shows the continual existence of the power predicated, but also disproves Pantheism. The act of parting with power or forces, frequently observable in organic chemistry, is apparent to sensible creatures in space, and the act of parting with time in indefinite space. If an eternity be allowed to an infinitely small portion of power for growth or formation, it must become definite: an eternity of passed time is equal to existent power. A point being given, as a centre in indefinite space, a nebula is immediately formed by this power, and, according to Müller, the action of this original power is three-fold, viz. by attraction, repulsion, and a power indifferent to both, which is quiescent, and what we call original matter, or physis, or hyle, or æther; and there being a constant preponderance of attraction to the centre, the æther is attracted or compressed towards it. Besides this, the nebula possesses a rotatory motion, of which even the smallest parts partake, and assume the form of a vortex or atom. Every vortex possesses attraction, repulsion, æther, and, as it turns upon its axis, a rotatory motion. Either the vortex has just the degree of velocity in its rotation, which, added to the constantly decreasing repulsion, is equal to the attraction, and then the vortex is fluid, and assumes the form of drops; or there is a preponderance of rotation, when the vortex becomes gaseous; or there is too little rotatory motion, in which case the vortex concentrates itself into a substance, and throws off particles, which move round it as a centre and together form a system: the vortex then is solid or fixed. The vortices are atoms; the rotatory motion when increased is heat; when diminished is cold.

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* This celebrated work has been ascribed to Mirabaud and La Grange, but was in fact written by Baron Hollbach, when residing in the house of La Grange.

Every vortex or atom, as soon as it has positively adopted one of the three forms, fluid, gaseous, or solid, is an element, and is unchangeable. There is in the universe an infinite number of elements, which differ in their inherent powers according to the different quantities of æther which they contain. These elements may be denominated metals, and of them oxygen, as containing the least attraction, may be overcome by any of the others; when thus overcome the process is called oxidation. The more solid and dense elements accumulate round a heavenly body in the progress of its formation, while the lighter and finer elements settle on its surface; thus oxygen is everywhere in our atmosphere. Out of these materials an original central heavenly body formed itself. According to mathematical laws, rotation must have increased in proportion as the condensation augmented, and consequently the more dense the vortices or atoms became, the greater was their rotatory motion, which produced increase of heat, and consequently oxidation of oxygen, and fire, and the throwing off, from the equator of the original central heavenly body, masses of burning and melting metals; in proof of which it has been calculated that our earth would throw off masses from the equator if it revolved upon its axis 121 times quicker than a cannon ball flies, and that these fragments would move round the earth as its satellites.

Applying this process to the original central heavenly body, we arrive at the result that the twenty millions of stars of the Milky Way are the first regular metallic fragments thrown off by that body, while the few thousands of stars, visible to the eye, and the sun, are the later and irregularly-ejected portions, all of which still burn, and consequently give light and heat to their respective planetary systems. The planets are probably thrown-off portions of the sun, and, in consequence of their now limited size, have long since cooled, grown habitable, and become satellites of the sun. He considers comets to be masses of water, or of vapour arising from water.

In thus giving an account of this system of cosmogony, it is almost unnecessary to observe that it is merely presented here to show what kind of speculations the term cosmogony, as at present understood, includes.

COSMO'GRAPHY (*κοσμογραφία*), the description of the system of the world, from the two Greek words *γράφω*, to write, and *κόσμος*, which signifies the world, or the universe, considered as a system of order. Cosmography, strictly limited, has nothing to do either with the origin and creation of things, which is the subject of cosmogony, nor with the metaphysical philosophy of the constitution of things, which is cosmology. It is merely the description of the system of the material world, as it is, or as it appears to our senses. Nor does it comprehend any examination of the separate parts of the system, except in so far as each is connected with the whole, any more than the description of a machine comprehends any account of the wood or iron or other material of which it may be fabricated. Yet this distinction has been sometimes neglected. There is a work, for instance, by Paul Merula, under the title of 'Cosmographia Generalis,' fol. Amst. 1621, which is in the greater part merely a description of the different countries of the earth, or in other words a treatise of geography. In like manner, the English work of Dr. Heylin, first published in 1622 under the title of 'Microcosmos,' and afterwards under that of his 'Cosmography,' is merely a compilation of geography and history. The word cosmography may perhaps legitimately admit of some variety of acceptation, in regard to the extent of what is to be considered the system of the world, or of the universe. Of the universe absolutely we can of course predicate nothing; but as anything may be called the whole which can be regarded as complete in itself, so the word universe is applied sometimes to this globe alone, which in one sense is the universe to us, and sometimes to that solar system of which our globe is one of the parts. But the term cosmography might also, without impropriety, be used as meaning a view or description of any separate portion of the entire universe still more extensive than the solar system.

COSNE, a town in France, in the department of Nièvre, on the right or east bank of the Loire, just at the junction of the little river Novain, 102 miles in a straight line S. by E. of Paris, or 110 miles by the road through Fontainebleau and Montargis, 47° 24′ N. lat. and 2° 56′ E. long. Cosne is a town of considerable antiquity, and appears in the 'Itinerary of Antoninus,' under the name of Condate, a Celtic word, denoting 'a corner,' and applied commonly to places situated in the angle formed by the junction of two streams. (D'Anville.) In the records of the middle ages the town is mentioned by the name of Condida.

Cosne is situated in a country rich in iron ore, and is one of the principal towns for the manufacture and sale of iron goods. Knives and scissars are mentioned by Expilly (1762) as the principal articles of manufacture: since his time the manufacture of anchors of the largest size, cannon-balls, and iron work for ships or for warlike purposes, has grown to great importance; that of cutlery is still carried on. There are several cooperages; gloves are also made. The town is situated at the foot of a plateau or table land; it is neat and well laid out, though in the older part the streets are narrow. There is a handsome theatre, and there are several good inns, and a public walk on the bank of the Novain. The population in 1832 was 5123 for the town, or 5987 for the whole commune.

Before the revolution this town contained several monastic establishments. It has now a court of justice (*Tribunal Civil*, or *Tribunal de Première Instance*) the court-room of which is handsome. It is the capital of an arrondissement, occupying the north-west extremity of the department, and containing (in 1832) a population of 66,850; there are in it many iron works.

COSSACKS, a people inhabiting those parts of the Russian empire which border on the northern dominions of Turkey, Poland, and Tartary, as well as the southern parts of Siberia. Both the name and origin of this singular people are involved in uncertainty: the former they appear to derive from the Tartar word Kasak or Kaisaks, signifying light-armed mercenary horsemen. They were for a long time known by the Caucasian appellation of Tsherkassi (or Circassians), and to this day call their capital Tsherkask. As to descent they appear to be of the native Russian race, intermixed with Tartars, Calmucks, and Gipsies, an origin of which their language and religious practices leave scarcely a doubt. Russian forms the groundwork of their dialect; in military matters it is corrupted with Turkish, and in legal affairs with Polish words. The first mention made of them is about the time of the downfall of the Tartar dominion in Russia. As a united people they seem to have sprung up in Southern Russia out of the remains of that dominion. There, amalgamating with the natives and fugitives from all parts, they gradually extended their power to the Bug and Dniester, building towns and villages, and

war against the Turks and Tartars. For the purpose
nce they were classed into the married and unmar-
whom the latter devoted themselves exclusively to
ession of arms, warfare, and plunder. They fortified
ves in their head-quarters on an island of the
called Korlitzkoi-Ostrof, from three streams on the
nk of the river. They gave this settlement the
Setch or Setcha, while they themselves, from their
sition, bore that of Zaporoghes. The married men
some distance from the spot, in villages, between
eper and Bug. At this period, the middle of the fif-
entury, the Cossacks do not appear to have had any
government; but when the emergency arose they
chief, whose authority terminated with the cessa-
he emergency. They furnished troops at their own
he Voivodes, established in the Ukraine by the Li-
princes.

ds the commencement of the sixteenth century, a
military republic, governed by elective chiefs, was
ed among these rude tribes by a Russian of low
ut great courage. They had not at this time
the name of Cossacks, nor were they known by it
y until the year 1516, when they began to act a
ous part in Polish affairs.

5 Yermak or Yermolai-Timofief, a Cossack of note,
ted by Muscovite oppressors, who had subjugated
cks of the Don in 1549, deserted his quarters on
r, directed his flight along on the Volga, destroyed
nate of Kutchum, and then established his fol-
the south of Siberia; hence arose the nation of
ran Cossacks. In 1580 the Cossacks are first men-
s distributed into 'Pulks,' or regiments, on the
of their defending Tshegrin, in Poland, against
rs, under the command of Ostafy Dakiewitsh. Ten
fore, upon their return from a victorious campaign
he Turks, as auxiliaries of Ivan IV. of Muscovy,
ded New Tsherkaskoi on the right bank of the
hey next accepted the protection of Poland, and,
Stephen Bathory, the king of that country, divided
es into 10 regiments of infantry and 2000 horse-
latter receiving pay out of a tax levied upon the
santry. He also appointed an Attaman or Het-
hief over them, and his successors endeavoured on
ons to interpose them as a barrier against the in-
of the Tartars of the Crimea and Budjak, and
se their implacable enmity to the Turks and Tar-
e encroachments made on their rights by Sigis-
. gave rise to a long series of contentions, which
Chmielnitzki, their Attaman, seeking the protec-
ussia in 1654. At this time their force consisted of
nts, 37,549 men strong, besides some hundreds of
. They remained faithful to Russia until the
, when their Attaman Bulavine went over to
XII. of Sweden; but he was not followed by the
es of the Dnieper. They again became subject to
nd in Peter the Great's time we find him disband-
ossack regiments in his service, and re-modelling
his harsh measure induced them to throw them-
the arms of the Khan of the Crimea; but they
became disgusted with their new masters, and
ly sued for pardon of the Empress Anne, who
em to settle again on the Russian territory. Here
ined until they provoked the Empress Catherine
urbulences, who ordered their Setcha to be de-
inhabitants to be scattered, and the Cossacks
kraine to be formed into regiments of hussars.
oghes were banished to the peninsula of Taman,
these exiles sprang the present Cossacks of the
In later times the Cossacks have been allowed
il enjoyment of their settlements, and have been
from taxation on condition of furnishing certain
s to their Russian masters. In 1831 the emperor
e-established the regiments of the Ukraine under
ination of the Cossacks of Little Russia. At pre-
troops are wholly composed of cavalry, and are
buted :—

Imperial Guards.			Men.
of the Don	1 regt.,	10 squads.,	1200
Euxine	1	2	240
Ural	1	—	120
Attaman	1	10	1200
			2760

Of the Line.			Men
Brought forward			2,760
Cossacks of the Don	70	350	42,400
" Euxine	21	195	12,600
" Little Russia	18	90	12,800
" Siberia	30	150	18,000
" Ural	10	50	6000
" Upper Terek	3	15	1800
" Lower do.	3	15	1800
" Volga	3	15	1800
" Bob	3	15	1800
	164	917	101,760

Besides two batteries of horse artillery of the Don. One-half of this force is always kept in readiness for service; the other forms the reserve: the whole however may be called out at once, and the strength of the regiments may be augmented at the emperor's mandate. Every Cossack, between the ages of 18 and 40, is liable to perform military duty. Each regiment is drawn from one or more stanitzas or districts, and every Cossack is required to supply himself with a horse, arms, and equipments. The young are called out first, and men of advanced age are retained as the reserve, unless they volunteer for field duty. The recruits are more favoured than any others in the Russian service; they are neither chained on the march to head-quarters nor subject to bodily examination. In time of war the period of service is unlimited; in time of peace it is confined to three years. The Cossacks of the Euxine, who are attached to the corps stationed in the regions of the Caucasus and Georgia, are almost invariably in active service. There is no longer a local Attaman; Count Razumoufsky, the last chief of the Ukraine, was dismissed by Catherine II., and the post of Attaman of the Don has been suppressed by the present emperor. The nominal dignity of Attaman is vested in the heir-apparent to the Russian crown. The Cossack receives no pay but when in the field or on the Russian frontier. The dress of the soldiery is a short vest in the Polish style, large trowsers of deep blue, and a black sheepskin cap. Their arms consist of a long spear, sabre, musket, pair of pistols, and a whip with a leather thong, called a natraika, which they apply to their enemy's as well as their charger's back. They are mostly members of the Russo-Greek church, enjoy their own independent constitution, and are a purely military people. The only authority that we possess as to their actual numbers is a return of the year 1749, when the number of hearths was 118,459, and of male persons 955,228. In the beginning of the present century Archenholtz affirmed the number of males fit for duty to be 700,000.

COSSEIR, a town of Egypt on the Red Sea, in 26° 7′ N. lat., and 34° 21′ E. long. It is about 100 miles east of Kenneh on the Nile in Upper Egypt. The caravans which trade with Arabia, proceed from Kenneh to Cosseir, through the sandy desert east of the Nile; the track, about two thirds of the way from Kenneh, crosses a rocky ridge, on the east side of which a valley opens, leading to the coast of the Red Sea where Cosseir is situated. Several springs or wells are found on this track. The Ataoni Arabs live in this part of the country, and escort the caravans between Kenneh and Cosseir. Cosseir is only an open road, but it is the chief medium of communication between Egypt and Arabia, especially since Mehemet Ali Pacha has become master of the Hedjaz in the latter country. From Cosseir, vessels cross over to Jidda, the port of Mecca, or to Yambo, the port of Medina. Cosseir is a small assemblage of poor dwellings, the resident population of which amounts to only about 1000; but there are large storehouses where the caravans deposit their goods. (See the Chart of the Red Sea, north of Jidda, 1836, published from the survey of Maresby and Carless.)

COSSIMBAZAR. [MOORSHEDABAD.]

CO'SSONUS (Clairville), a genus of Coleopterous insects, of the family Curculionidæ. Technical characters:—Antennæ short, rather thick; funiculus seven-jointed, the basal joints longer than the following; club large, and of an oval form; rostrum rather long, thickened at the apex; thorax truncated before and behind, and somewhat depressed above; elytra elongate, moderately convex above, and covering the abdomen; tibiæ dilated towards the apex, where there is a large hook; tarsi rather slender, the penultimate joint bilobed.

About seventeen species of this genus are known, of which Schoenheer selects *Cossonus linearis* as the type. This species is not uncommon in England, and has been found in boleti and in old trees: it is about a quarter of an inch in length, and of a narrow elongated form, and black or brown colour; the elytra are punctate-striated. *Cossonus tardii* is another British species, which closely resembles the last, but is of a larger size, being nearly half an inch in length.

COSSUS (Fabricius), a genus of moths—section, Lepidoptera Nocturna—family, Hepialidæ (Stephens). Technical characters: antennæ long, rather slender, furnished on the inner edge with a series of transverse elevated ridges (which, when viewed from the side, resemble the teeth of a saw); two distinct palpi, thickly clothed with scales, and each three-jointed; head very small; upper wings longer and larger than the lower; body large.

Larva lignivorous. Pupa enclosed in a cocoon.

Cossus ligniperda (Fab.) is one of the largest of the British moths, measuring, from tip to tip of the wings when expanded, from three to three and three quarter inches. It is of a grey colour: the upper wings are mottled with white, and adorned with numerous irregular black lines; the under wings are almost of a uniform brownish-ash colour; the anterior part of the thorax is of a buff colour, and there is a transverse dark mark towards the posterior part; the body is of a dark brownish-grey colour, with rings of a silver-like hue.

The larva or caterpillar is about three inches in length when full-grown, and of a yellowish colour; the upper part of the body is pink, the head is black, and the first segment of the body (or that joining the head) has two irregular black patches above.

This caterpillar emits a very strong and disagreeable odour, and if touched with the hands, the scent cannot be discharged from them for some considerable time, although they may be frequently washed. It resides in and feeds upon the wood of the poplar, oak, and aspen; but old pollard willows appear to be its most favourite haunts. These we frequently see perforated with numerous oval holes, large enough to admit the finger, and when the caterpillars are abundant, the trees attacked eventually fall a sacrifice to their ravages. It is three years before attaining maturity, at which time it encloses itself in a tough cocoon, formed of pieces of wood joined together by a glutinous web.

The moth is common in various parts of the south of England, and is often called the *goat-moth*, a name which has probably been applied from the property of emitting a disagreeable odour having been transferred from the caterpillar to the moth.

A detailed history of the Cossus ligniperda will be found in the 'Mémoires pour servir à l'Histoire des Insectes,' by De Geer; and for its anatomy we refer our readers to the 'Recherches sur l'Anatomie et les Métamorphoses de différentes Espèces d'Insectes,' by L. L. Lyonet. This latter author has also published a substantial quarto work, with numerous beautiful plates, engraved and drawn by himself, which is entirely devoted to the anatomy of the caterpillar above mentioned. This work, which was the labour of years, must ever stand as a monument of the great skill and perseverance of its author, who boasts of having destroyed but one caterpillar for its completion. It is entitled, 'Traité Anatomique de la Chenille qui ronge le Bois de Saule,' &

CO'SSYPHUS (Olivier), a genus of Coleopterous insects, of the section Heteromera, and subsection Taxicornes. The principal character of this genus consists in the dilated and flattened sides to the thorax and elytra—a structure also found in many of the Nitidulæ and in the Cassidæ. These insects, if it were not for the dilated portions of the thorax and elytra, would be of a long and narrow form, but with these parts they present an oval outline. The thorax is nearly semicircular, and its dilated margins, as well as those of the elytra, are semitransparent. The antennæ are eleven-jointed; the four last joints are considerably thicker than the preceding, and rather flattened; the terminal joint of the maxillary palpus is dilated, and of a somewhat triangular form; the head is completely hidden by the anterior part of the thorax.

These insects inhabit the south of Europe, and the northern parts of Africa and India. About ten species are known.

Cossyphus Hoffmansegii is nearly half an inch in length, and of a dark-brown colour; the parts of the thorax and elytra which extend beyond the insect itself are of a paler hue. It is difficult to give an accurate idea of this curious insect, which appears as if it were an ordinary shaped beetle pressed against the under side of a little oval scale of wax, so that its impression is distinctly visible above, being convex, whereas the scale itself is concave.

The present genus, with two others (*Helæus* and *Nilio*), form, according to Latreille, the second tribe of the family Taxicornes, and are included under the head *Cosyphenes*.

COSTA-RICA. [Central America.]

COSTANTI'NA or **COSTANTINAH**, as the Arabs pronounce it, the ancient Cirta, once the capital of Numidia, is the capital of the east division of Algiers, and the largest town of the whole state next to Algiers itself. It stands on a steep rocky hill, round three sides of the base of which flows the river Rummel, which is the principal affluent of the Wad-el-Kebeer, the ancient Ampsaga. The rocky peninsula on which the town is built is joined on the south-west side by a neck of land to the adjacent country. The country around Costantina is a high terrace between the lesser or maritime Atlas to the north, and the higher or central chain to the south. The Wad-el-Kebeer, and the Seiboos, or river of Bona, both flowing northwards into the Mediterranean, and the Sirkah or Abeadh river, which flows southward into the Melgigmarsh, have their sources in this high land. The central Atlas range which runs from west to east through the province of Titterie, on entering the borders of the province of Costantina, south of the Jurjura mountains, which belong properly to the Maritime Atlas, inclines to the south-east, forming the groups called Vanougah, I-aite, Sellim, and Mustewah; it then joins the extensive group called Jebel Auress, which is directly south of Costantina, beyond which it continues in an east direction, forming the mountains of Tipasa, in which the Mejerdah has its sources, and which extend into the kingdom of Tunis; from the Jebel Auress, however, an offset is detached to the north-east, separating the waters of the terrace of Costantina which flow northwards into the Wad-el-Kebeer and the Seiboos from those which flow eastward into the Mejerdah or Bagradas. East of this ridge, and towards the sources of the Mejerdah, are the plains of Myskianah, renowned for their fertility; they belong to the province of Costantina, and border on Tunis.

Among the towns are Tipsa or Tipasa, Gella, a frontier town and garrison near the Mejerdah, which is here called Serrat, and further north, in the valley of the Sujeras, an affluent of the Mejerdah, is Tiffesh, the ancient Thebestis. This part of the country has been lately visited from the side of Tunis by Sir Greville Temple, *Excursions in the Mediterranean*, 1835.

The road from Algiers to Costantina, after crossing the river Isser, passes over the southern skirts of Mount Jurjura, and then enters a narrow defile called by the Arabs Beeban, or 'the gates,' and by the Turks, Dammer Cappi or the 'iron-gates,' which is cut through perpendicular rocks. Six miles east of it is another difficult pass called Accaba, or 'the ascent,' being over a ridge which seems to connect the Maritime Atlas with the more south or central range. The road lies over a high narrow ledge with precipices on each side. Descending to the east, the road enters the fertile plain or terrace of Mayanah. In this region the Boosellam, an affluent of the Boojeyah river, has its source. Proceeding to the east is Zammorah, known for its olive plantations, and farther on the road to Costantina is Seteef, the Colonia Sitifensis, of which Shaw describes some remains. The town stood on a hill facing the south, near the Boosellam. In the plains south of Seteef, which consist chiefly of pasture land, dwell several Arab tribes, one of which, the Beni Ammer, have a very bad character. About twenty miles south-east of Seteef, are Taggah and Zainah, in a fine open country at the north base of the Jebel Mustewah. At Zainah, Shaw saw the remains of a triumphal arch in honour of Severus, and other antiquities. He thinks that Zainah is probably the ancient Zama. About fifteen miles east of Zainah is Medrashem, in a plain on the skirts of the Jebel Auress, with a handsome sepulchral monument supported by pillars. On the opposite or south side of the Atlas ridge lies the valley of the Shatt or Shott, a marsh into which several streams empty themselves, and which is again separated by another more southern ridge from the Zaab, or valley of the Adje-dee river, where the Biscareens dwell. In the valley of the Shatt are the ruins of Thu-

Tubuna, now called Thubna. This part of the country is inhabited by several powerful Berber tribes.

Returning to the latitude of Costantina, there seems to be to the east of Seteef a transverse ridge of high land which divides the plains of Seteef from the terrace of Costantina, which appears to be higher, and which extends nearly 80 miles towards the east, where it is bounded by the ridge already mentioned, which divides the sources of the Seiboos from those of the Mejerdah. This region, which is very elevated, consists of fertile plains with hills upon them, and to the south it blends itself with the valleys which lie within the extensive group of the Jebel Auress. The country is partly tilled and sown with corn, or planted with olive and other fruit-trees, and partly left for pasture. It also produces rice, hemp, flax, and tobacco. Between the Jebel Auress and the town of Costantina, is a mountain called Ziganeah, apparently a projection of the Auress, and at the foot of which lies Physgèah, formerly a Roman colony, with an abundant fountain and reservoir, the water of which was formerly carried to Costantina by an aqueduct. Physgèah is about fifteen miles south of Costantina. To the north, the terrace of Costantina opens towards the coast of the Mediterranean, by two valleys or gorges formed through the ridge of the lesser or maritime Atlas, one by the course of the Wad-el-Kebeer, almost direct north from Costantina, and the other by the Seiboos in a north-east direction to the gulf of Bona. The mouth of the Wad-el-Kebeer, which is the nearest point of the sea to Costantina, is about forty-eight miles distant. The distance from Costantina to Bona is about 100 miles, and from Costantina to Algiers twice as much. About half way between Costantina and Bona is Gelma, or Guelma, where are some Roman remains, and which seems to be a strong position, commanding the entrance into the plain of Costantina. The French expedition under Marshal Clausel, in November 1836, assembled at Bona to the number of about [illegible]000 men, whence they marched upon Costantina by the left or west bank of the Seiboos; they found great difficulty in passing their cannon and waggons over that part of the lesser Atlas which lay in their way, and in crossing the swollen torrents. When they arrived on the high terrace of Costantina, they experienced a heavy fall of snow, which lasted several days, and by the severe cold disabled or killed a large part of the army. Having come in sight of Costantina, they found the place defended by Arabs and Kabyles, with some cannon on the walls, and too strong to be carried without a regular siege, for which they were not prepared. Accordingly they were obliged to march back to Bona, much annoyed by the Arabs during the first day's retreat. They left a body of troops in the position of Guelma, and a new expedition against Costantina is talked of. (Marshal Clausel's *dispatch* after his return to Bona, as given in the *Times* and other newspapers of the 19th December, 1836.) Costantina is described as a large city, larger than Algiers in appearance, though Shaw gives it only a good mile in circumference; the houses have sloping roofs covered with tiles, a circumstance which of itself bespeaks the difference of its climate from that of the sea coast. The population is supposed to be between 30,000 and 40,000. It was the ancient Cirta (probably Carth, 'the city'), the residence of Massinissa and Jugurtha; it afterwards became a Roman colony in the time of Cæsar, Cirta Sittianorum, and the head town of Numidia Propria, until Constantine gave it his own name. A Roman bridge, a triumphal arch, several cisterns, a handsome gate, and other remains of antiquity, have been described by Shaw, who is still the best, we had almost said the only good, authority for this fine and extensive region. (See also *Nachrichten und Bemerkungen, über den Algierschen Staat*, Altona, 1798, and Poiret, *Voyage en Barbarie*, in 1785-6.) The Beylik of Costantina occupies nearly the east half of the whole Regency of Algiers, and most of it, especially its south part, is still unknown to Europeans. It is impossible to guess at its population; but by reckoning the numerous tribes scattered over its surface, it must be considerable. Under the Romans it formed part of Mauritania. After the invasion of the Arabs, and the subsequent breaking up of the power of the eastern Caliphs, it formed a separate kingdom, nominally subject to the Fatimites. It had wars with the kings or sultans of Tunis, and about 1520 was subjected by Khair Eddin Barbarossa, from which time it has remained annexed to the Regency of Algiers. The Bey of Costantina was the most powerful of the three Beys among whom the territory of the Regency was divided. His sway however extended only over the open country around his capital, and some other places where he kept garrisons, such as Bona, Boojeyah, and a few more points along the coast or towards the frontiers of Tunis. All the mountainous parts are inhabited by tribes of Arabs and Berbers, who never acknowledged the sovereignty of the Turks, and only pay tribute when obliged to do so by force. Ahmed, the present Bey of Costantina, has remained in his capital as an independent Bey of the country ever since the French took possession of Algiers. For the maritime towns of the province of Costantina, see ALGIERS and BONA.

COSTARD, GEORGE, born about 1710, M.A. of Wadham College, Oxford (of which he afterwards became fellow and tutor), in 1733, rector of Twickenham, in 1764, at which place he died, January 10, 1782. He was respectable, both as a classical and oriental scholar, and as a mathematician; an account of his miscellaneous writings may be found in Kippis's 'Biographia Britannica.' He was the editor of the second edition of Hyde's work on the 'History of the Persians;' but his claim to notice is principally derived from his 'History of Astronomy,' &c. London, 1757. This work appears to have obtained more reputation abroad than at home, where it certainly is not appreciated. It is a history of the rise and progress of the fundamental doctrines of astronomy, mixed up with an elementary account of them, in order of discovery, and accessible to a student who can use a common globe, and has the first rudiments of geometry. In all matters of ancient and oriental learning, Costard frequently cites the passage and always the reference, which gives his work a lasting value.

COSTER, LAWRENCE, or LAURENT JANSZOON, a native of Haarlem in Holland, whom the Dutch consider as the true inventor of the art of printing. He is believed to have been born at Haarlem about the year 1370; and in after-life filled successively several minor offices in his native town, as sacristan, churchwarden, and treasurer of the church of St. Bavon. His name appears in the registers of that church in the years 1423, 1426, 1432, and 1433. The time of his death is not mentioned. The following is the account given by Hadrian Junius, a Dutch writer of the sixteenth century, of Coster's claim to the discovery of printing. Junius's 'Batavia' was published in 1588, but the passage, the substance of which we here give, is believed from the context to have been written twenty years before. He relates, that about 128 years before he wrote, this Lawrence Coster resided in a large house, situated opposite the royal palace at Haarlem, which was still standing. That Coster, during his afternoon walks in the vicinity of the city, began by amusing himself with cutting letters out of the bark of the beech-tree; and with these, one after another, the letters being inverted, he printed small sentences for the instruction of his grandchildren. That being a man of genius and research, and finding the ink then commonly used apt to spread, he afterwards discovered, with the assistance of his son-in-law, Thomas the son of Peter (who, he tells us, left four children, most of whom afterwards enjoyed high offices in the state), a more glutinous kind of ink, with which he succeeded in printing entire pages, with cuts and characters. That he, Junius, had seen specimens of this kind, printed on one side of the paper only, in a book entitled 'Speculum Nostræ Salutis,' written by an anonymous writer in the Dutch language; the blank pages being pasted together, that the leaves might turn over, like those of an ordinary book, without showing the vacancies. That, afterwards, Coster made his letters of lead instead of wood; and lastly of pewter, finding that metal harder, and consequently more proper for the purpose; and that various drinking cups, made of the remains of this old type, were still preserved in the aforesaid house, where, but a few years before, Coster's great-nephew, or great-grandson, Gerard Thomas, had died at an advanced age. That the invention in question soon meeting with encouragement, it became necessary to augment the number of hands employed; which circumstance proved the first cause of disaster to the new establishment; for that one of the workmen, named John (whom Junius suspects might be Fust, for he does not absolutely accuse him), as soon as he had made himself sufficient master of the art of casting the type, and joining the characters (notwithstanding he had given an oath of secrecy), took the earliest opportunity of robbing his master of the implements of his art; choosing, for the completion of his purpose, the night preceding the Feast of the Nativity, when the whole family, with the rest of the inhabitants of the city, were at church, hearing the midnight mass. That he escaped with his booty to Amsterdam, thence to Cologne, and, lastly, that he took up his residence at Mentz, where he established his printing-press; from which, within the following year, 1442, were issued two books, printed with the characters which had been before used by Lawrence Coster at Haarlem: the one entitled 'Alexandri Galli Doctrinale,' the other 'Petri Hispani Tractatus.'

This account, Junius assures us, he had from several old gentlemen who had filled the most honourable offices of the city, and who themselves had received it from others of equal respectability and credit, as a well-founded tradition; as a lighted torch, he says, passes from one hand to another without being extinguished. He adds, that he well remembers that Nicholas Galius, the tutor of his youth, who was an old gentleman of very tenacious memory, used to relate that, when he was a boy, he had often heard one Cornelius, then an old man upwards of eighty years of age, who had been a bookbinder, and, in his youth, had assisted in the printing-office of Coster, describe, with great earnestness, the various trials and experiments made by his master in the infancy of the invention: upon which occasions he would even shed tears, especially when he came to the robbery committed by one of the workmen, which he related with great vehemence; cursing those nights in which, as he said, for some months, he had slept in the same bed with so vile a miscreant; and protesting that he could, with the utmost pleasure, execute the thief with his own hands, if he had been still alive: which relation, as Junius tells us, corresponded with the account which Quirinus Talesius, the burgomaster, confessed to him he had heard from the mouth of the same old bookbinder.

It is mainly upon this testimony that the writers of Holland found what they consider the undoubted pretensions of Haarlem to the invention of printing. Junius is the earliest writer at present known who makes express mention of Lawrence Coster as the inventor of typography; but he certainly was not the first who asserted that the art was invented at Haarlem. Scriverius mentions that a treatise expressly upon the subject in question was written at Haarlem, between 1549 and 1561, by John Van Zuyren, who was for some time scabinus or sheriff, and afterwards burgomaster of that city. Theodore Volchart Coornhert, in the dedication of a translation of Cicero's 'Offices' to the burgomaster, judges, and senators of Haarlem, where the book was printed in 1561, also ascribes to this city the invention of the art; as does Guicciardini, in his 'Descrizione di tutti i Paesi Bassi,' printed at Antwerp in 1567, p. 180. All these writers however appear to have founded their statements upon the very same tradition as that related by Junius, with the omission only of Coster's name. The question, it will be readily seen, is too complicated for further discussion here. The reader who would enter more fully into it must consult Meerman's 'Origines Typographicæ,' printed at the Hague in 1765, 2 vols. 4to., and Ottley's 'Inquiry into the Origin and Early History of Engraving upon Copper and in Wood,' 4to., London, 1816, vol. i. pp. 172, and seq. These authors support the cause of Haarlem. Baron Heineken, in his 'Idée Générale d'une Collection complette d'Estampes,' 8vo., Leips., 1771, and Lambinet, in his 'Origine de l'Imprimerie,' 2 vols. 8vo., Paris, 1810, consider the whole story as not entitled to the least credit, and are the chief writers on the other side.

COSTROMA, a province in the eastern part of Russia in Europe, forming a portion of Great Russia, and situated between 57° and 58° N. lat. and 40° and 42° E. long. According to Arsenief its area is about 29,990 square miles: the surface is in general level, and the soil, though not naturally fertile, has been rendered productive: the northern parts of the province are full of swamps, and the southern sandy. The Volga enters Costroma a little above Yaroslaf, in the south, and traverses it in a north-westerly direction: the Costroma and Unsha, or Ounya, as well as the Vetluga, which fall into the Volga on its left bank, drain the northern, eastern, and southern districts. There are several lakes; the largest, that of Galitsh, near the town of that name, is about 10 miles long and 5 broad; and the Tshuklonea, further north, is upwards of 5 miles in diameter. The inhabitants are active agriculturists: though they import wheat, they grow more rye than they consume, together with much hemp and flax. The land is full of large forests, which are principally crown property. The bear, lynx, wolf, and fox are common. Little attention is paid to the breeding of cattle, but the fisheries are carried on vigorously, and produce nearly 800 tons per annum of salmon, sturgeons, &c. There are considerable manufactures in the province, particularly of linens, woollen cloths, Russia leather of superior quality, brandy, and mats; the majority are established in and about the capital, and the number of hands employed on them is upwards of 6000. There were 19 schools in the province in the year 1832, independently of 11 ecclesiastical seminaries. In 1796 the population amounted to 1,046,092 souls; and as the average increase for the years 1825-6-7 was upwards of 11,200, it cannot at present be estimated at less than 1,500,000. Two-thirds of the rural population are vassals of the nobility, who are the great land proprietors. In summer great numbers of mechanics leave their homes in quest of subsistence in other quarters. The province contains 12 circles, 17 towns, and 851 parishes. It is an eparchate or bishopric, styled the Eparchate of Costroma and Galitsh, and in 1830 contained 11 monasteries, 3 nunneries, 13 what are termed cathedrals, and 858 churches. The revenue which Costroma yields is about 3,300,000 roubles a year (about 150,000*l.* sterling). The principal towns, besides Costroma, the capital, are Galitsh (about 7000 inhabitants); Makurief, the town next in importance to Costroma for its trade (3000); Yurgowetz-Powolskoi (2600); Sol-Galizkaya (3400); and Kinishna (2400).

COSTROMA, the seat both of the civil government of the province and of the military government of Costroma and Vladimir, is agreeably situated at the confluence of the Volga and Costroma, or Kotorosla, in 57° 45′ N. lat. and 41° 12′ E. long., about 325 versts (about 217 miles) to the north-east of Moscow. It is said to have been built in the year 1152, and was united to the grand duchy of Moscow by Ivan Vassiljewitsh I. A wall of earth, which has been converted into walks, surrounds it. The upper part of the town covers a height, on the summit of which stands the cathedral, a handsome edifice, surrounded by trees and showy buildings. In this quarter are the government buildings, with the 'Gostinoi-Dwor,' or bazaar, a spacious quadrangle with piazzas, facing them; and betwixt them is the flower and fruit-market, which is held under a roof covered with canvass. Below this upper town, and above the lower town, is another quarter, built entirely of stone; and along the high banks of the Volga runs the third quarter, consisting of a long line of neat houses, of wood and stone, relieved by the trees and gardens interspersed between the buildings. Costroma contains 42 churches, besides 11 chapels, a mosque, and 2 wealthy and spacious monasteries. One of these establishments, that of Ipatskoi, founded in 1330, is celebrated as having been the spot from which the czar, Michael Fedorovitsh Romanoff, the father of the present dynasty, emerged, in 1613, to assume the sceptre of Muscovy. The gate through which he then turned his back on the hood and cowl has been kept closed ever since. The bishop of Costroma has his residence in this monastery, which is enclosed with a stone wall. There is a Tartar suburb and mosque outside of the walls. Costroma is an affluent and thriving town; it has 8 asylums for the indigent, an ecclesiastical seminary, a high school and a district school, about 1100 houses, and about 10,000 inhabitants, who are employed partly in trade and partly in the manufacture of linens, Berlin-blue, sealing-wax, soap, leather, bells, &c. It has periodical fairs.

COSTS, in the technical sense of the word, are the expenses incurred by parties in proceedings at law or in equity. In civil actions particular importance and interest attach to the principles and practice concerning them, since, though in themselves merely incidental and subordinate to the main cause of action, it not unfrequently happens that they become a prominent object of anxiety and contention. Under the head of COSTS IN CIVIL ACTIONS may be considered the steps by which the mutual rights and liabilities to them were originally created, and have been subsequently qualified; the modifications to which those rights and liabilities are subjected by reason of the particular character in which the parties may sue or be sued; and the practice by which the amount of costs is ascertained and controlled.

At common law neither the plaintiff nor the defendant was entitled to recover costs the one from the other as a matter of right; the only liability which attached to the

essful party, beyond the direct result of the suit,
n amercement imposed upon him for his false com-
or defence. If, however, the plaintiff succeeded, the
ere at liberty, and were usually directed, to take his
to consideration in estimating the amount of damages.
efore there was any legislative enactment upon the
, it is said that the justices in eyre, and afterwards
f assize and nisi prius, were in the habit of assessing the
f his costs, exclusively and apart from the damages.

first statutory provision with respect to costs was that
tatute of Marlbridge (52 Hen. III., c. 6), which gave
the defendant in one particular case (wardship in
y), which became extinct in the reign of Charles II.
ame the statute of Gloucester (6 Edw. I., c. 1), by
successful plaintiff recovered the costs of his suit
ases where he was previously entitled to recover
s. The right to costs under this statute, which
yled costs of *increase*, was entirely independent of
ount of damages recovered. The consequence of
ing found mischievous, power was given to the
by the stat. of 43 Eliz. c. 6, s. 2, in all personal
except such as concerned the title or freehold of
d those of battery, where the debt or damages did
unt to 40*s.*, to grant a certificate of that fact, and to
the plaintiff no greater or more costs than the sum
ebt or damages recovered should amount to, but
heir pleasure. Owing to the indisposition of the
to grant certificates under this statute, it was for
me wholly inoperative, and it was therefore enacted,
statute of 22 and 23 Car. II., c. 9, s. 136, that in all
of trespass, assault, and battery, and other personal
, where the jury should find damages under 40*s.*, the
should recover no greater costs than damages, un-
judge should certify that an assault and battery
ficiently proved, or that the freehold or title of land
efly in question. It has been observed of this sta-
h great show of reason, that the legislature intended
preclude the plaintiff absolutely from recovering
s, where the damages were below 40*s.*, in all perso-
ons but those specially named, and even in them,
he judge *gave* them by a certificate under the act.
ved, however, a different construction from the
by which it was held to apply to those actions only
h it was possible to grant the prescribed certificate,
rs being left to the provisions of the previous statute.
er therefore it appeared, either from the form of the
r from the pleadings, or the nature of the case, that
tion of a battery, or of freehold or title of land, could
be involved in the dispute, so as to give the judge
on of certifying, it was held that the plaintiff would
led to full costs, notwithstanding the statute.

ay here be observed, that the changes which have
taken place in the rules of pleading seem to have
a virtual repeal of so much of the statute of Charles
es to trespasses on real property.

statute passed in the reign of William and Mary,
ealed by the new Game Act of the present reign,
s of suit were given to plaintiffs, in actions where
r tradesmen, apprentices, and other dissolute per-
ere found guilty of trespassing upon other persons'
n pursuit of game or fish. And by the statute of
Will. III., c. 11, full costs were given to the plain-
ctions of trespass, where the judge should certify
trespasses were wilful and malicious.

particular case of actions for oral slander, where
s are actionable in themselves, either from their
rinsic meaning, or from having been spoken of a
reference to his profession or trade, the plaintiff's
more costs than damages, where the latter fall short
s absolutely barred by the statute of 21 Jac. I., c. 16.
rto, those statutes only have been considered which
a *plaintiff's* right to costs. The first act which re-
the interest of *defendants* in personal actions was
ed in the twenty-third year of Henry VIII., which,
ith another act of the reign of James I., gives costs
fendant where the plaintiff is nonsuited or has a ver-
sed against him, in all cases in which the plaintiff
ave been entitled to them if he had succeeded. By
uent enactment of the reign of Elizabeth, costs are
the defendant where the plaintiff is guilty of delay
ntinuance in his suit. The defendant's right to costs
r extended by an act of the present reign, which
im proportional costs in cases where the plaintiff
enters a *nolle prosequi*, i. e., remits his suit as to part of his alleged cause of action. The same act gives reasonable costs to one or more of several defendants sued together, who shall have a *nolle prosequi* entered as to him or them, or upon trial of the action shall have a verdict pass for him or them, unless the judge shall certify that there was reasonable cause for joining him or them in the action.

In cases cognisable by the court of requests or of conscience of any city, borough, or town, it is usually provided by the statute creating the jurisdiction of the inferior court, that if the plaintiff recover any sum within the limits of the inferior court, he shall not be entitled to costs; and that the defendant, if he succeed, shall recover double costs.

It having been found that plaintiffs frequently oppressed their debtors by arresting them for a larger sum than that which they really owed, thus subjecting them to greater expense and difficulty in procuring bail and effecting their liberation from custody, it was enacted, by the stat. of 43 Geo. III., c. 46, that if a plaintiff did not recover the sum for which he arrested and held the defendant to bail, the court, upon motion, might direct that the defendant should be allowed his costs, if it should be made appear by affidavit, to the satisfaction of the court, that the plaintiff had not any reasonable or probable cause for holding to bail to that amount. To bring a case within this statute it would seem to be necessary to make it appear to the court *affirmatively* that the plaintiff had no reasonable or probable cause, and that a case of suspicion only will not be sufficient to entitle the defendant to his costs. In estimating the amount of probable cause, the court will take into consideration the particular circumstances of the case in question, and not merely the amount of the verdict.

In the late very important changes which have been made with regard to the mode of pleading in civil actions, the courts have taken great pains to provide a more equitable apportionment of costs between the parties than was formerly observed. Thus, for many of the cumbersome and prolix forms in which it was usual to state the more ordinary causes of action, they have prescribed certain concise precedents, an adherence to which is enforced by allowing to the defendant the costs occasioned by any excess, and throwing them upon the party really in fault, the plaintiff's attorney. By another rule, made expressly for the benefit of defendants, it has been ordered, that no costs shall be allowed to a plaintiff upon any count or issue upon which he has not succeeded at the trial, and that the costs of all issues found for the defendant shall be deducted from the costs payable to the plaintiff. The effect of this rule is most important, inasmuch as it puts an end to the former unjust practice, which in some cases allowed the plaintiff costs, and in others disallowed them to the defendant upon those issues upon which the latter was successful. By a still later rule, directed both against plaintiffs and defendants, it has been ordered, that where several counts or pleas shall have been put upon the record, the successful party shall not be allowed any costs upon the issue or issues upon which he succeeds, unless the judge trying the cause shall be of opinion, and shall so certify, that a distinct subject matter of complaint or defence was *bonâ fide* intended to be established in respect of each count or plea.

As to the manner in which the right or liability of a party to costs may be modified by the particular character which he sustains, a striking instance used frequently to occur in former days, in the case of plaintiffs suing in the representative character of executors or administrators. In favour of such parties it was held, that wherever they sued for a cause of action which they could not have recovered in their individual capacities, they would not be liable to the defendant for costs, upon being nonsuited, or having a verdict pass against them. For some time a notion prevailed that this exemption proceeded from a consideration of the degree of ignorance under which they were supposed to lie with respect to the contracts or other causes of action of the deceased parties whom they represented. But the sounder opinion at length obtained, that the true cause of this freedom from liability was to be found in the particular language of the different enactments bearing upon the subject.

After having been long considered too extensive, this privilege has been effectually curtailed by an enactment of the present reign, 3 and 4 Will. IV., c. 42, s. 31, which puts executors and administrators upon the same footing with other plaintiffs, unless the judge before whom the action shall be brought, or a judge of any of the superior courts, shall otherwise order. The disposition of the courts, with regard to this act, appears to be not to interpose in behalf of the plaintiff, unless the defendant has brought the action upon himself by practising something like a fraud upon the plaintiff, thus discouraging the practice formerly prevalent of bringing merely speculative actions in a representative character, under the shelter of immunity from costs.

In penal or *qui tam* actions, the plaintiff's right to costs depends altogether upon the provisions of the statute which creates the cause of action. There are also express statutes which impose additional liabilities upon a plaintiff of this class under certain circumstances.

When a party has obtained the permission of the court to sue *in formâ pauperis*, i. e. to be provided, on account of his poverty, with all necessary writs, as well as with counsel and attorney, gratis, he will not be liable to pay any costs, but he will still be entitled to receive them.

The mode in which the amount of costs payable between the parties is ascertained, is by taking the Nisi Prius records, with all the papers, briefs, and other documents, to the proper officer of the court, who then taxes the costs according to a certain prescribed scale, allowing or disallowing particular charges at his discretion. Before the late act for the amendment of the law (3 and 4 Will. IV., c. 42), a different system of taxation prevailed in the different courts at Westminster, to remedy which defect power is given to the judges, by the act referred to, to make regulations for establishing an uniform practice in all.

Hitherto we have only considered *single* costs, or those derived from the statute of Gloucester. In some cases *double* and *treble* costs are expressly given by statute: and wherever a statute gives double or treble damages, the plaintiff shall also have double or treble costs. The following is the manner in which double costs are calculated:—First, the prevailing party is allowed his single costs, which include the expenses of witnesses, counsel's fees, &c., and afterwards he is allowed half the amount of the single costs, without making any deduction on account of counsel's fees, &c. Treble costs consist of the single costs, half the single costs, and half that half again.

Such are some of the principal matters relating to costs in actions at law, a subject so purely technical in its nature, that any minute inquiry into its rules and mode of administration would be foreign to the purposes of this work. Between the courts of equity and those of common law there is this important difference with respect to costs, that the former are not bound by any of the enactments above enumerated, but are invested with a discretionary power upon the subject. In the exercise of this power they are guided, not merely by the event of the suit, but by a consideration of its real merits, and of the interests of the parties concerned. Thus, although the party failing is *primâ facie* liable for the costs, he will be relieved from the burden if he has prosecuted the suit in the conscientious discharge of a duty imposed upon him as a trustee for the benefit of others. On the other hand, a party proceeding erroneously will not be allowed the costs of his erroneous proceedings, even though the decree of the court may ultimately be in his favour.

In *criminal proceedings* the rights and liabilities of parties to costs depend altogether upon express statutory enactments. With a view to forward the ends of justice, provisions have been made by various statutes to defray, out of the funds of the county, at the discretion of the court, the expenses incurred by prosecutors and their witnesses in cases of felony. (Hullock *on Costs;* Tidd's *Practice;* Archbold's *Practice of the Court of King's Bench;* Grant's *Practice of the High Court of Chancery.*)

CÔTE D'OR, a department in France, forming part of the antient province of Bourgogne. It is bounded on the north by the department of Aube, on the north-east by that of Haute Marne, on the east by that of Haute Saône, on the south-east by that of Jura, on the south and south-west by that of Saône-et-Loire, on the west by that of Nièvre, and on the north-west by that of Yonne. Its form is irregularly oblong: the greatest length is, from N. N. W. to S. S. E., about eighty miles; and the greatest breadth at right angles to the length is about seventy miles. The area of the department is about 3365 square miles; and the population, in 1832, 375,877, or 111 or 112 to a square mile, being much below the average of France. Dijon, the capital, is 161 miles in a straight line south-east of Paris, or 185 miles by the road through Melun, Sens, Joigny, and Tonnerre.

This department is traversed in the direction of its breadth by hills, forming part of the chain which connects the Cévennes with the Vosges. A range of these hills to the south-west of Dijon is called Côte d'Or, the golden slope or upland, and gives name to the department.

These hills separate the basin of the Seine from that of the Saône and Rhône. The Seine itself, and its tributaries, the Brevon and the Ource, with its feeders the Digenne and the Grame, rise on the north-western slope of these hills; as do the Voisin, the Cousin, the Serein, with its feeder the Argentalet, and the Armançon, with its feeders the Brenne, the Lozerain, and the Loze, whose waters all find their way into the Yonne, an important tributary of the Seine. The Ource does not rise in this department, but just within the adjacent one of Haute Marne; it has however the greater part of its course in the Côte d'Or. On the south-eastern slope of the hills rise the Tille, with its feeders the Ignon and the Norges, the Suzon, a tributary of the Ouche, and the Meuzin, Mauzin or Meuzain, with its tributary the Bouzoire. The Ouche rises on the northern side of the hills, but passes through a depression, by which the chain is separated into two parts, and, with all the waters from the south side, flows into the Saône. The Dheune or Dheure, a tributary of the Saône, flows along the southern boundary of the department: the Arroux and the Gors, which fall into the Loire, water the south-western part. The Saône waters the south-eastern part of the department.

In agricultural produce the department of Côte d'Or is, on the whole, rich: the quantity of wheat raised is half as much again as the average produce of the departments of France, and in rye and mixed corn double. In maize the produce is rather below the average; in barley, oats, buckwheat, and potatoes, very much below. In wine, which is chiefly produced in the southern part of the department, where the range of the Côte d'Or extends, the produce is very great. Not only is the quantity of land occupied by the vine more extensive than in the average of the departments, but the vines are much more productive. The wine, which is chiefly red wine, is known by the general name of Bourgogne (Burgundy): the first growths are La Romanée-Conti, Chambertin, Richebourg, Clos-Vougeot, La Romanée-St. Vivant, La Tache, St. George, and Corton: of white wine, the only first growth is Puligny. Much wine is exported. The quantity of woodland is much above the average. Horses and horned cattle are numerous, especially the former; but of sheep the number is comparatively small. The wool grown is altogether insufficient for the wants of the department; and as there are few woollen manufactures, the inhabitants have to import woollen cloths and other goods. The fields in this department (on the western side at least) are divided by quickset hedges as in England.

The north-east part of the range of hills which we have mentioned as crossing the department, contains iron; and there are many iron-works, for carrying on which the quantity of wood affords great facility. The department is well provided with the means of communication: the high road from Paris by Dijon to Geneva passes through the middle of it, and that from Paris by Auxerre and Châlons-sur-Saône to Lyon crosses it in the south-west part; these are both roads of the first class. Roads of the third class connect these two: one from Montbard to Saulieu; another from Rouvray by Vittaux to Dijon; and a third from Dijon by Beaune to the village of La Rochepot: five other roads of the same class unite at Châtillon-sur-Seine, in the north part of the department; and two others lead, one from Dijon to Langres (department of Haute Marne), where it meets the high road from Paris to Bâle or Basel, and the other from Beaune to Dôle and Besançon. The Canal de Bourgogne traverses the department, following the valleys of the Armançon in the north-west and the Ouche in the south-east. The Saône is the only navigable river. There is no predominant manufacture in the department, unless we except that of iron wares: some cottons and woollens are made; also paper, leather, hats, earthenware, copper utensils, and some chemical articles, as soda, chlorine, and acetic acid.

The department of Côte d'Or is divided into four arrondissements or sub-prefectures: that of Châtillon in the north, population 52,226; that of Dijon in the east, population 135,435; that of Beaune in the south, population 117,996; and that of Sémur in the west, population 70,220. The department constitutes the diocese of Dijon, the bishop of which is a suffragan of the archbishop of Lyon. It is under the jurisdiction of the Cour Royale of Dijon; and sends five members to the Chamber of Deputies. It is in the eighteenth military division, the head-quarters of which are at Dijon.

The principal towns are Dijon (population 25,352 for the town, 25,552 for the whole commune), on the river Ouche, at the junction of the Suzon; Beaune (population 9272 for the town, 9908 for the whole commune); Sémur (population 3985 for the town, 4088 for the whole commune), on the Armançon; Châtillon-sur-Seine (population 3689 for the town, 4175 for the whole commune); Seurre (population 3571 for the town, 3591 for the whole commune), on the Saône; Auxonne (population 3477 for the town, 5287 for the whole commune) on the Saône; and Saulieu (population 3050), near the springs of the Voisin, the Cousin, and the Argentalet. For Dijon, Beaune, and Auxonne, we refer to their respective articles: of Sémur, Châtillon, Seurre, and Saulieu, as well as of some smaller towns, we subjoin an account.

Sémur, the capital of an arrondissement, 148 miles from Paris by Avallon, and 40 from Dijon, is sometimes called Sémur-en-Auxois (Auxois was a division of the former province of Bourgogne), to distinguish it from another town of the same name (Sémur en Brionnois) in the adjoining department of Saône et Loire. It is built on a granite rock, on the picturesque banks of the Armançon, which nearly encircles the town, and over which are two good bridges. The streets are neat, and tolerably paved; the houses handsome, and the public walks agreeable. There is an antient church, and a 'donjon' composed of four antient Gothic towers. The population, in 1832, was 3985 for the town, or 4088 for the whole commune. The manufactures of Sémur are cotton and woollen yarn, calico, woollen cloth, umbrellas, and bee-hives. There are many nursery-grounds near the town, and trade is carried on in corn, wool, and hemp grown in the neighbourhood. The frogs of Sémur are in high repute; and it is said that by the sale of these creatures, 600*l.* or 800*l.* is obtained yearly. Sémur is the residence of a number of the antient gentry of the district, whose resources have however been much impaired by political changes. There were, before the Revolution, many religious houses. There are a *tribunal de première instance*, a high school, a small public library, a small theatre, and the *depôt de mendicité* (poor-house) of the department. The town of Sémur was the only one in Bourgogne that in the time of the League adhered to Henry IV., who recompensed the fidelity of the inhabitants with some marks of favour. It was reduced to ashes by fire, A.D. 1588. The celebrated Saumase (Salmasius), the antagonist of Milton, was born in this town in the same year.

Châtillon, distinguished as Châtillon-sur-Seine, from its situation on the banks of that river, is on the road from Paris to Dijon by Troyes, 134 miles from Paris, and 48 from Dijon. The town, though with a population of no more than 3689 (4175 for the whole commune), extends for about a mile along the road. The main street is neat and of considerable breadth. There is a handsome château on an eminence, with a garden, park, and piece of water, which belonged to Marshal Marmont, a native of this town. At a short distance from the town, on a hill planted with trees, is the striking ruin of an antient castle of the dukes of Bourgogne. From the foot of this hill rises the Douix, a stream which, though it joins the Seine at the distance of a few musket-shots from its spring, equals in winter the Seine itself in the volume of water, and in summer surpasses it. The town possesses an hospital and a high school, a library, a *tribunal de commerce* or mercantile court, and a subordinate court of justice, *tribunal de première instance*. The trade of the town and its immediate neighbourhood is considerable: the chief manufactures are iron wares, cotton goods, coarse woollens, leather, cask staves and hoops, paper, and hats: there are breweries and bleaching houses for wax. Much agricultural produce, wine, wool, and wood, horned cattle and sheep, is sold at the weekly market. While Marshal Marmont occupied the château, he had a large farm, in which the most improved methods of cultivation were practised, and where he kept a numerous flock of merino sheep, and breeding-stables for horses: he had also in his park iron-works, and manufactories of beet-root sugar, of sal ammoniac, and of vermicelli. The immediate environs of the town are devoted to the cultivation of oats and rye. Of the whole arrondissement one-third is woodland, from which the iron-masters derive their fuel.

Châtillon was in the middle ages a place of some strength, and the capital of a county, which was long united to the duchy of Bourgogne. There were, before the revolution, many religious houses. In 1814 it was the seat of fruitless negotiations for peace between Napoleon and the allies. It is much resorted to in winter by the neighbouring gentry.

Seurre is on the left or south-east bank of the Saône, and on the road from Beaune to Dôle and Besançon, 220 miles from Paris by a circuitous road through Dijon and Beaune, and 38 from Dijon. The situation of the town is very pleasant; the houses are well built of brick; and there is a fine park, which serves as a promenade for the townsmen, with a château of modern construction, built in imitation of the English style. There were formerly several religious houses here for persons of both sexes. There is a bridge over the Saône, which has been repeatedly carried away and re-established. The inhabitants (population 3571 for the town, 3591 for the whole commune) carry on trade in corn and hay, the produce of the neighbourhood, to which we may probably add fish and fruit.

Saulieu is on the great road from Paris by Auxerre and Châlons to Lyon, 152 miles from Paris. It is a place of considerable antiquity, and existed in the time of the Romans. Ammianus Marcellinus, the Itinerary of Antoninus, and the Theodosian Table mention it under the name of Sidolocum. There existed for some time the remains of a building, which was always considered to have been a temple of the sun; and some antiquities dug up in the neighbourhood have served to confirm the tradition. It is said that St. Andoche, one of the early missionaries of the gospel in Gaul, suffered martyrdom here in the persecution under Marcus Aurelius. At an early period there was established a Benedictine monastery, which was, A.D. 731, pillaged and burnt by the Saracens, and afterwards re-established and endowed by Charlemagne; but about the middle of the twelfth century it was secularized, the church (dedicated to St. Andoche) was made collegiate, and the ample revenues of the monks were for the most part appropriated by the bishops of Autun. In 1359 Saulieu was sacked, and the church pillaged and burnt, by the English. In the wars of the subsequent period, domestic and religious, it suffered much. In 1579 it was besieged by the army of the League under Tavannes, to whom it surrendered; but the inhabitants, a few years after, admitted the royalist troops. The immediate site of the town is flat, but it is half way up a hill of considerable elevation, which rises on the south-west: the town itself is walled the faubourgs or suburbs are more extensive than the town and better built. The population in 1832 was 3050. Saulieu has long been a place of great trade: there are twelve considerable fairs in the year; and there is a *tribunal de commerce* for the regulation of mercantile affairs. Cotton yarn is spun; this branch of industry was introduced by the curé or parish priest, M. Meigret, A.D. 1760, for the charitable purpose of giving employment to the poor: woollen cloths and hosiery are made; and tannery is carried on, though not to the same extent as formerly; in the early part of the last century there were 22 tan-yards. The other articles of trade are produced in the neighbourhood: wine, wool, flax, hemp, timber (especially staves for casks), fire-wood, turnips, which are in great repute, and cattle: the cattle are reared in the pastures of Morvan, a neighbouring district, and sold to the people of Lorraine and Alsace. Saulieu was the native place of the engineer Vauban. Before the Revolution there were a small hospital and one or two religious establishments.

Arnay-le-Duc is on a branch, now disused, of the road from Paris to Lyon, about 167 or 168 miles from Paris. It is near the river Arroux, whence it is sometimes called Arnay-sur-Arroux. The population, in 1832, was 2412 for the town, or 2563 for the whole commune. The chief trade of the place is in grain, wool, and cattle. Some coarse woollens, serges, and druggets are manufactured. There was formerly a castle here, of which one tower yet remains; it was used about the middle of the last century as a town-hall.

Nuits or Nuyts or Nuys is a small town at the foot of a hill, on the river Mauzin or Meuzain, 14 or 15 miles from Dijon, on the road to Beaune. The town was formerly fortified. It was taken by the Germans who, in the religious wars of the sixteenth century, came to the aid of the French

Protestants: after the town had capitulated, it was set on fire, and many of the inhabitants massacred. The walls were afterwards allowed to go to decay, and ultimately the site of them and of the ditches was disposed of for building houses. Coarse woollens and paper are made, and there are many dye-houses. The neighbourhood affords good building and paving stone; but it is especially famous for its wine, which bears the highest character. The population, as given in the *Forces productives de la France* of M. le Baron Ch. Dupin (1827), was 2633. Thurot, a French naval commander, killed A.D. 1760, in a naval combat with the English, on the coast of Ireland, was a native of this town.

Meursault, rather a village than a town, is in the neighbourhood of Beaune. It is famous for its wines. The population, in 1832, was 2016 for the place itself, or 2066 for the whole commune.

Montbard or Montbart is on the road from Paris to Dijon by Joigny and Tonnerre, 142 miles from Paris and 42 from Dijon: it is on the river Brenne, a little above the junction of that river with the Armançon. The town is built on the slope of a hill, and behind it rise the gardens of the château which has been rendered illustrious as the residence of the naturalist Buffon. In the highest part of the gardens (which include the summit of the hill) is an antient tower, the relic and memorial of a castle which in feudal times commanded the place. The walls of the castle and several of the towers were standing till a comparatively late period. The town is divided into two parts by the Brenne: the streets are steep and irregular, but neat. The inhabitants, in 1832, amounted to 1916 for the town, or 2074 for the whole commune: they manufacture dog-skin gloves, laces, woollen cloth, and hosiery; and trade in wool, hemp, wood, and leather. There are some iron-works at the village of Buffon in the neighbourhood, established by the great naturalist: marble is also quarried not far off. The house of M. Buffon is in the main street of Montbard, and is a plain building: the court and the garden (the entrance to which is by steps) are behind. The garden is laid out in terraces rising one above another, and planted with trees, chiefly foreign, which form agreeable thickets. The pavilion in which Buffon wrote the principal part of his great work is still standing, but it has suffered during the revolutionary troubles, in the course of which it was pillaged, and much of the furniture which was in it in the time of Buffon has disappeared: there are in the house some remains of his cabinet of natural history. Buffon was a native of Montbard, which was also the native place of his coadjutor d'Aubenton, whose experiments for the improvement of wool were carried on here. The Canal de Bourgogne passes close to Montbard.

Nolay is in a narrow valley on the road from Beaune to Autun. It had, according to '*Le Dictionnaire Universel de la France*' (1804), 1988 inhabitants: they manufacture woollen cloth, common hats, and leather. Carnot was born here. The vineyards of Montrachet, which produce the finest white wine in the department, are near this town.

Vittaux or Vitteaux is on the river Brenne, and on the road from Paris to Dijon by Auxerre and Rouvray, 160 miles from Paris and 28 from Dijon. It is a small town, of tolerably good appearance, with the ruins of an antient castle, destroyed in 1631 by the order of Louis XIII., and a public walk of plane-trees. The inhabitants amounted, in 1832, to 1904 for the town, or 1919 for the whole commune: they manufacture woollen cloth, and trade in grain, wool, hemp, hay, and some wine. Near the town is a water-mill for expressing oil. Many Merino sheep are bred in the neighbourhood.

St. Jean de Losne is on the right or north-west bank of the Saône, at the point where the Canal de Bourgogne joins that river. It is known in history for the gallant defence made by the townsmen, 400 in number, and a garrison of 150 soldiers, against the forces of the duke of Lorraine and the imperial general, Matthias Gallas,* amounting to 60,000 or even 80,000. Under the command of the chief municipal officers, and supported by the courage of the women, who shared the dangers of the fight, the defenders withstood and repelled two successive assaults. The approach of a body of French troops caused the siege to be raised. Louis XIII., then king of France, recompensed the loyalty of the townsmen by an exemption from taxes of all sorts. The inhabitants, in 1832, amounted to 1744: they trade in grain and hay, and manufacture woollen cloths and serges: there are some breweries.

Selongey is a small town on the Venelle, a streamlet flowing into the Tille, but which is in summer often dried up. It had, in 1832, a population of 1687. Good horses are bred in the neighbourhood. The other towns are Bezé, Grancey-en-Montagne, Is-sur-Tille, Mirebeau, Pontaillier sur-Saône, St. Seine, Sombernon, and Thil-le-Châtel, in the arrondissement of Dijon; Bligny, Châteauneuf, Cîteaux, where was a celebrated abbey [CITEAUX], Mont St. Jean, and Pouilly, in that of Beaune; Bussy-le-Grand, Chanceaux, Epoisses, Flavigny, Moutier St. Jean, Sainte Reyne, and Rouvray, in that of Sémur; and Aignay-Côte-d'Or, Baigneux, Laignes, Recey, and Vanvey, in that of Châtillon. But the population of each of these towns is probably below 1500.

COTE' DROIT, COTE' GAUCHE, the names given to the two great divisions of the Chamber of Deputies, or French representative assembly. That assembly, like most other representative bodies in Europe, consists of individuals some of whom are inclined to favour the royal prerogative, while others are in favour of democracy, or popular supremacy. The former take their seats on the benches which are to the right of the President's chair; the other on those to the left. The shape of the House is a semi circle, with nine or ten rows of seats raised one above the other. The President's chair is in the middle of the chord, facing the assembly. As in every great political party there are shades of opinion, some being more warm and violent, and others more moderate, discriminating, or cautious, so both the coté droit and the coté gauche are generally subdivided into three sections each. The more zealous royalists take their seats at the outer extremity of their side of the House towards the President, and are styled the 'extrême droite;' the ultra-liberals sit on the corresponding seats on the opposite or left side, and are styled the 'extrême gauche.' Next to each of these extremes, moving inwards towards the middle part of the curved line of the semicircle, sits the main body of each of the two divisions, which are simply styled coté droit and coté gauche, or la droite et la gauche, composed of men who are the professed supporters of certain fixed principles, monarchical or popular, free however from violence or faction. From the middle of each side of the House to the point directly opposite to the president, the remaining sections, forming two-fourths of the semicircle, are called the centre droit and centre gauche, and are occupied by members who, although with some shades of difference in their opinions, generally vote for ministers. These two centres united form about one-half of the House, and are in fact what in England would be called the ministerial side of the House. But instead of one opposition, as has been until now the case in the British parliament, there are in France two oppositions, right and left, of opposite sentiments, one royalist and the other liberal. According as the measures of the ministry for the time being are acceptable to either of these two parties, they obtain the votes of part of either coté, which, joining the two centres, gives the majority to ministers.

In the legislative assembly which succeeded the first national or constituent assembly in 1791, and which destroyed the monarchy, the left was occupied by the republican members, who were themselves divided into Girondins and Montagnards. The name of Montagne was given to the extreme or terrorist party, because its members crowded together on the upper seats of the left, where, seen from below, they formed a mountain of heads, dark and threatening in appearance.

COTENTIN, or COUTANTIN, a district in France, now comprehended in the department of Manche, except a small portion which is included in the department of Calvados. It took its name from its capital Coutances. Cotentin is a peninsula, jutting out into the English channel, by which it is bounded on the north, the west, and part of the east side; on the remaining part of the east side (viz., the south-east) it is bounded by the districts of Bessin [BAYEUX], and Le Bocage [BOCAGE], and on the south by the district of Avranchin. [AVRANCHES.] The length from N.N.W. to S.S.E. is about eighty miles, the breadth above thirty. It is watered by the river Vire, which divides it on the east from Bessin and Le Bocage, the Douve, and several smaller streams. The strata are chiefly of granite and schistus, and the soil is fertile in grain, but especially in pasturage; much butter is made, and many horses are reared, which are much esteemed: poultry is reared and sent to Paris. The quantity of wood is not great, and there are no vineyards, but cider is made in considerable quantity. Hemp and flax are grown. [MANCHE, DEPARTMENT OF.] The chief towns included in the district, with their population in 1832, are as follows:—Coutances, the capital, 8957; Cherbourg, 18,377 for the town, 18,443 for the whole commune; Granville, 7350; Valognes, 6338 for the town, 6940 for the whole commune; St. Vaast, 3502; Villedieu, 3074 for the town, 3095 for the commune; Montebourg, 2423 for the town, 2523 for the commune; Carentan, 2292 for the town, 2773 for the whole commune; and Périers, 1934 for the town, 2605 for the whole commune. The map of the 'Encyclopédie Méthodique' includes St. Lo (8154 for the town, 8421 for the whole commune) in Cotentin: we believe this to be correct.

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* Malte Brun, confounding these two leaders, speaks of the assailants as being under the command of 'Le Grand Duc Galéas.'

Cotentin has many islands along its coast line.

COTES, ROGER, born July 10, 1682, at Burbage, near Leicester, of which place his father was rector. His first education was received partly at Leicester school, partly from an uncle, who was the father of Dr. Robert Smith, the author of the Optics. He was afterwards placed at St. Paul's School, and in April, 1699, was admitted at Trinity College, Cambridge, of which foundation he was elected Fellow in 1705. In January, 1706, he was elected Plumian Professor, at the time of the establishment of that Chair. In 1713 he took orders. He died June 5, 1716, aged thirty-four, and is buried in the chapel of his college, where there is an epitaph upon him by Dr. Bentley. He was succeeded in the Plumian professorship by his cousin, Dr. R. Smith, the editor of his works. (*Biographia Britannica.*)

The early death of Cotes being taken into account, few persons have left more reputation behind them than he did, in matters of exact science. Newton is reported to have said, 'If Cotes had lived, we should have known something.' As it is, we have not much to say in a biographical article. The discoveries of Cotes have exercised an influence upon various parts of mathematics, which will be alluded to in the proper place. For his reputation on the continent, it is unfortunate that he died so near the termination of the discussion relative to fluxions. The problems which he left were made the subject of a challenge to foreign mathematicians by Dr. Brook Taylor, in the interval which elapsed between his death and the publication of his works; and some bitterness of feeling was excited which was unfavourable to the proper estimation of their merits. (Montucla, *Hist. des Math.*, vol. iii., p. 154.) We shall now briefly describe them.

The first work which Cotes published was the second edition of Newton's 'Principia' (A.D. 1713), to which he prefixed the well-known preface. This treats of gravitation in general, and of the objections which were made to it. He also published an account of a remarkable meteor in the 'Phil. Trans.' for 1715. His hydrostatical and pneumatical lectures were printed after his death in 1738, by Dr. R. Smith.

The mathematical papers of Cotes were published after his death by Dr. Smith, under the title of 'Harmonia Mensurarum, sive analysis et synthesis per rationum et angulorum mensuras promotæ: accedunt alia opuscula mathematica,' Cambridge, 1722. The most definite description which can be given of it is, that it was the earliest work in which decided progress was made in the application of logarithms and of the properties of the circle, to the calculus of fluents. The first book contains an extended comparison of systems of logarithms, with applications of them to the finding of areas. The second is what we should now call a table of integrals, depending on logarithms and arcs of a circle. The third consists in applications of the second. Then follows a mass of extensions, digested, mostly from Cotes's papers, by Dr. Smith. The *opuscula* consist in, 1. A tract on the estimation of errors in mixed mathematics, consisting mostly of an investigation of the method of choosing spherical triangles, so that the errors of the *data* shall produce least effect upon the *quæsita*, but ending with what we must call the first glimpse of a method of choosing the proper mean for discordant observations. [LEAST SQUARES, METHOD OF.] 2. A tract on the differential method of Newton. 3. On the construction of tables by differences. 4. On the descent of heavy bodies; on cycloidal motion, &c.

CÔTES DU NORD, a department in France, one of the five into which the former province of Bretagne has been divided. [BRETAGNE.] It lies on the coast of the great bay of St. Malo, an inlet of the English channel, which bounds it on the north. It is bounded on the east by the department of Ille-et-Vilaine, on the south by that of Morbihan, on the west by that of Finistère; all of which are portions of the antient Bretagne. The greatest length of the department is from W. b. N. to E. b. S., about eighty-one or eighty-two miles; the greatest breadth about fifty-three. The area is about 2868 square miles, and the population, in 1832, 598,872, giving 209 or 210 inhabitants to a square mile, which is above the average population of France. The capital is St. Brieuc, on the small river Gouet near its mouth, 230 or 232 miles in a straight line west of Paris, or 278 miles by the road through Dreux, Alençon, Mayenne, Laval, and Rennes. [BRIEUC, ST.]

The coast line of this department is very irregular, being broken by deep bays, the principal of which is that of St. Brieuc, and jutting out in a number of small headlands, of which the following succeed each other from east to west:—Pointe St. Cast, Cap Frehel, Pointe d'Herquin, Pointe de Port de Pomme (these two are at the extremities of the bay of St. Brieuc), Pointe de Plouaze, Pointe de Minar, Pointe de Milfaut, Pointe du Sillon, and Pointe de Chien. The coast is studded with small islands and rocks; Ile d'Embier is near the Pointe de St. Cast, Les Verdelets in the bay of St. Brieuc, the Ile St. Roui and the Iles de Brehat between the Pointe de Milfaut and the Pointe du Sillon, the Ile d'Er between the last point and the Pointe de Chien; the Ile de Gueltat, Ile Tomé, the Iles Melban, Platte, Riòuzoi, and the others of the group called les Sept-Iles (the Seven Islands), Les Triagons, the Ile Molenes or Molenoe, and Le Taureau, are to the west of Pointe de Chien.

The Ménez mountains run through this department in the direction of its length, and parallel to the coast· the predominant rock in this chain is granite. From these mountains on the north side flow a number of streams, the general direction of which is north and south, and which after a short course fall into the English channel. The Rance flows first towards the east, it then turns northward, passes Dinan, where the navigation commences, and entering the department of Ille et Vilaine, falls into the sea at St. Malo: this is perhaps the longest river in the department; its whole course is about sixty miles, for fifteen of which it is navigable. The other streams we shall enumerate in the order in which they occur from east to west:—The Fremur; the Arguenon, with its tributaries, the Rosette and the Rieulle; another Fremur; the Evran; the Urne; the Gouet or Goy, which passes St. Brieuc and falls into the sea just below it; the Ic; the Trieux, with its tributary the Leff; the Jaudy and the Guindy, which unite at Tréguier; and the Guer, which passes Lannion, with its tributary the Guier. The streams which rise on the southern slopes of the Ménez mountains flow into the Blavet or the Vilaine, which fall into the Atlantic; except the Hiere, which flows into the Aulne, a river that empties itself into the Brest Road. The Blavet itself rises in the department, as do its tributaries, the Lorette, the Salon, and the Doulas; while the Oust, the Forest, the Lie, the Trinité, the Livet, the Grenedan, and the Mue, immediately or ultimately flow into the Vilaine.

The high road from Paris to Brest traverses this department from E. b. S. to W. b. N., entering it near the little town of St. Jouan de l'Ile, and passing by Lamballe, St Brieuc, Guingamp, and Belle-Ile-en-Terre.

The climate of this department is temperate, but the atmosphere is foggy near the coast. The soil varies considerably. The Ménez mountains have a dry stony soil, and barren heaths of sand extend both on the north and south side of them; but to these heaths succeed, especially near the coast, plains of very great fertility. Maize and wheat are raised in abundance; a considerable quantity of wheat is exported to Spain and Portugal. Flax and hemp are grown, and apples for the purpose of making cider. The *Encyclopédie Méthodique* states that some wine is made, but that it is consumed in the district: when the vintage is abundant, much of it is converted into brandy. The pasturage is excellent, great numbers of horned cattle are reared, and some horses: butter is made, and sent to Paris and elsewhere. The mineral wealth of the department consists of iron and lead, marble, granite, slate, and coal. The inhabitants are generally engaged in agriculture, in fishing, and in various manufactures, especially of linens, which bear the name of Breton linens; in making which, in several places, many hands are employed. Like the other departments of Bretagne, this is remarkable for the preponderance of the rural population over that of the towns.

The department is divided into five arrondissements; viz., Loudéac in the S.E. (pop. in 1832, 98,604), and Guingamp in the W. and S.W. (pop. 115,679), both in the inland parts of the department; Dinan on the E. (pop. 111,739), St. Brieuc in the centre (pop. 171,730), and Lannion in the W. (pop. 103,120), along the coast. The chief towns are St. Brieuc, the capital, on the Gouet (pop. 10,420), Dinan on the Rance (pop. 8044), Guingamp on the Trieux (pop. 6100), Lannion on the Guer (pop. 5196 for the town, or 5371 for the whole commune), and Loudéac (pop. 1865 for the town, or 6736 for the whole commune): for an account of which the reader is referred to their respective articles. Of the other towns we shall subjoin a brief notice.

Lamballe is in the arrondissement of St. Brieuc, and on a river which unites with the Evran: it is on the high road from Paris to St. Brieuc, 266 miles from Paris and 12 from St. Brieuc. It is supposed to be an antient place; and according to some, derives its name from the Ambiliati or Ambialiates, or Ambialites, who (according to some MSS.) are mentioned in the Commentaries of Cæsar (de B. G. III. 9) among the allies of the Veneti in their naval war against the Romans. The town is surrounded with old walls; the houses are whitened; and the situation of the place in the midst of orchards, gardens, and meadows, renders it very agreeable. It is divided into the upper and lower towns, and has, beside, two suburbs. There is an antient castle, formerly belonging to the Dukes of Penthièvre, and a promenade attached to it, planted with large trees. The inhabitants amounted, in 1832, to 4390: they manufacture the best parchment in France, thread, linen, and leather; and trade in cattle. There is a library attached to a reading society in the town. La Noue, a celebrated Huguenot captain, was killed, A. D. 1591, at the siege of Lamballe, which was held by the Duke of Mercœur against Henri IV.

Quintin is on the upper part of the river Gouet, about 10 or 12 miles south-west of St. Brieuc, in the arrondissement of St. Brieuc. It has an antient castle of singular architecture; and in the neighbourhood are two Druidical obelisks or stones, of 26 or 27 feet high, one of which is yet standing; the other has been thrown down. The inhabitants, who amounted in 1832 to 4293, manufacture and export fine linens and iron wares; they trade also in honey, hides, wax, and hats.

Tréguier is in the arrondissement of Lannion, near the sea, at the junction of the rivers Jaudy and Guindy: it is not on any main road. Tréguier was, in the middle ages, a place of greater consequence than now. It was the seat of a bishopric, erected in the ninth century, and appears to have been a prosperous place of trade until it was burnt, A. D. 1592, by the Spaniards who supported the party of the Duke of Mercœur, a blow from which it never fully recovered.

It has now a population of 3178 persons, who carry on considerable commerce; they manufacture linen yarn, and rear a number of the best horses in Bretagne. A good deal of hemp is grown in the neighbourhood, from which sail-cloth is made. The port of Tréguier, which is formed by the æstuary of the rivers, is safe, and accessible to vessels of 200 tons.

Paimpol is in the arrondissement of St. Brieuc, on the coast, not far from the mouth of the river Trieux: it is not on any main road. Paimpol has a safe and convenient harbour, from which vessels are fitted out for the Newfoundland cod fishery; and some trade is carried on in corn, butter, hemp, flax, and linen yarn. The population in 1832 was 1917 for the town, or 2108 for the whole commune.

Moncontour is in the arrondissement of St. Brieuc, several miles south-east of that city. It has a population of 1670. Fine linen is manufactured here.

Pontrieux is in the arrondissement of Gulingamp, on the river Trieux (from which it takes its name), several miles above its mouth, and not on any main road. The population in 1832 was 1562 for the town, or 1647 for the whole commune.

The other towns are—in the arrondissement of St. Brieuc, Châtelaudren, between St. Brieuc and Guingamp, with the bourgs or subordinate towns of Ploeuc (population of the commune 5453), St. Jacques, Lanvollen, and Pommerit:—in the arrondissement of Dinan, Jugon, on the Arguénon, on the road between Dinan and Lamballe, and Matignon on the coast; with the bourgs of Broons, St. Jouan de l'Ile, and Plancoet:—in the arrondissement of Gulingamp, Callac near the Hière, and Rostrenen near the Lorette, both in the mountainous part of the department; with the bourgs of Belle-ile-en-terre and Bourbriac (population of the commune 3613):—in the arrondissement of Lannion are the bourgs of Plestin (population of the commune 5040), La Roche, Lezardieux, and Vieux Marché:—in the arrondissement of Loudéac, Corlay, between Guingamp and Pontivy, on the river Salon; Uzel, near the Oust; and La Cheze on the Lie; with the bourgs of Plemet (population of the commune 3013), Colinée, St. Caradec, Gouarec, Langast, and Merdrignac. Where the population is not given it does not amount to 1500 for the towns or 3000 for the communes. There are several villages in the department which have a large rural population; as Plouha, Plelo, and Louargat, which have above 5000 each; eleven others have above 4000 each. Of the towns mentioned above Uzel is one of the chief marts in the department for the sale of linens; Jugon trades in linen, butter, and corn; and Châtelaudren in linen yarn, corn, trefoil seed, cattle, butter, and honey: this last-mentioned town was some years since nearly destroyed, and most of the inhabitants drowned, in a great flood, caused by a neighbouring lake breaking its banks. The village of Corseul, not far from Dinan, preserves the name of the Curiosolitæ or Curiosolites, the tribe who, in Cæsar's time (Cæs. de B. G. II. 34, III. 7, VII. 75), inhabited the district. The traces of a considerable town, destroyed many ages since, may be perceived near this village.

The department of Côtes du Nord constitutes the diocese of St. Brieuc, the bishop of which is a suffragan of the archbishop of Tours. It is under the jurisdiction of the *Cour Royale* or high court of justice of Rennes, and is comprehended in the XIIIth military division, of which Rennes is the head quarters. It sends six members to the Chamber of Deputies. Education here, as indeed throughout Bretagne, is in a very backward state.

COTINGA. [CORACINA (*Coracina Scutata*). PIAUHAU. PROCNIAS.]

COTTAGE. [HOUSE.]

COTTAGE ALLOTMENTS may be considered as such portions of land hired by labourers, either attached to, or apart from, their dwellings, as they, assisted by their families, may be able to cultivate without ceasing to let out their services daily to others. They are thus distinguished from larger portions of land which require some capital and the occupier's whole attention, and consequently partake more of the character of small farms. The object of cottage allotments is to increase the resources of the labourer; firstly, by supplying him with many necessaries and comforts which he would have a difficulty in purchasing from a portion of his wages, and which, if even he could do so, he would purchase at a great disadvantage; secondly, by enabling him to turn everything to profit, so that nothing need be lost. With regard to the quantity of land which ought to be let to the labourer for this purpose, there has been much discussion. Various experiments have been tried, and the opinion of the persons best informed upon the subject appears now to be, that a quarter of an acre is about the quantity which, without prejudice to his other employments, a labourer can in general thoroughly cultivate, and consequently derive the greatest profit from; but this, of course, will vary with circumstances. A large family, some of whom can assist, and uncertain employment, may render a larger portion desirable. In limiting the quantity to a quarter of an acre of land, it must be understood that we are speaking of land under cultivation; where means have been found in a neighbourhood for letting a sufficient quantity of pasture to cottagers for one or two cows, no inconvenience has been found to result, while a most important addition has thus been made to their means of subsistence. But the possession of a cow or cows by labourers is attended with other advantages: An appropriate employment is thus supplied to the female portion of their families, whom mechanical inventions have deprived of the facility which they formerly had of gaining their livelihood by knitting and spinning. Cheap and nutritious meals are afforded to persons of all ages, but more particularly children; and additional facilities are given for keeping pigs, which contribute not only to the immediate support of the family but, together with the cows, supply the means of maintaining the land in good heart by the manure which is produced.

The peasantry however throughout the country appear to possess very imperfect knowledge respecting the best mode of accumulating, preserving, and economizing manure, and some means for improving the practice upon this head appears necessary. During the last 50 years cottages in large numbers have been built in various parts of the country with little or no land attached to them, and even the land which formerly surrounded the antient dwellings of the poor has, in many instances, been taken away. Attention has however of late years been called to the destitute and helpless state of the peasantry, and it has been found, that from the circumstance of their having nothing which could call forth prudence and ingenuity, they were become reckless, devoid of skill, and incapable of taking care of them selves. For the purpose of improving them it has been reasonably considered that to make them careful they must have something to care for; to render them skilful they must be placed in circumstances which render the exercise of ingenuity necessary. All these objects are supplied by allotments of land, which are now daily becoming more common, although several serious difficulties to the immediate adoption of the system have to be encountered: a few of these difficulties we shall here enumerate:—

1stly. The builders and other speculators, to whom too many of the cottages in some of our rural districts belong, have built them close together in rows or streets, which renders it impossible for the allotments in such instances to surround the dwellings, a circumstance necessary in order that the cottager should derive full benefit from them. When the land surrounds the cottage the children may be occupied upon it without being removed from the mother's superintendence. The father, who, after a day's work, would hesitate about walking a quarter of a mile and back, may easily apply a little labour to his garden without separating himself from his family.

2ndly. The peasantry are ignorant of the value of allotments and the mode of cultivating them. These circumstances present difficulties which nothing but an early training in industrial schools arranged for the purpose can completely overcome.

3rdly. The farmers generally have strong prejudices against the system.

With regard to rent, it should be the fair value of the land, the same as would be paid by any other description of tenants. When allotments are given gratuitously they are lightly valued, and when let at too high a rent they cannot make a return to the labourer which will induce him to continue his exertions. It would seem that they should be let directly by the proprietor of the soil to the labourer, or the evils of the Irish system may be feared. The state of things in Ireland has been continually urged against the allotment system, but, as we think, without reason; for, 1stly., The Irish peasant depends almost wholly upon his allotment, looking to it, not as an auxiliary to his daily earnings, but as the total of his means of support; 2ndly., He is obliged by the competition for land to pay a rent which far exceeds the proportion paid by the tenants, and leaves him only a miserable pittance to subsist upon.

It has also been urged against the system of cottage allotments that it tends to encourage early marriages, and to the production of a race of beggars. That cottage allotments may have this effect is true, but the objection is mainly applicable, and perhaps has been mainly applied, to cottage allotments which are of such a magnitude as to render it impossible for the cottager to cultivate them without exchanging his character of a labourer for that of a farmer without adequate capital, or, as already observed, the objections apply to a state of society like that in Ireland. The multiplication of small farms is quite a different question from that of cottage allotments as here understood, and opinions can hardly be much divided as to the inexpediency of such increase.

Part of the objections also raised against cottage allotments will be removed by the improved administration of the Poor Laws.

It remains then to consider whether, under the actual circumstances of this country, the advantages above suggested, as likely to arise to the labouring man from the possession and cultivation of a small piece of ground attached to his dwelling, will not counterbalance all possible disadvantages which have been suggested as likely to result from the system; whether in fact the possession of a small piece of ground, as here understood, will or will not tend to raise the standard of comfort which a labouring man and his children will enjoy; and whether, if such be the case, such possession will not have a tendency directly the opposite to that which has been imputed to the system of small allotments of land.

For further information upon this subject see the publications of the Labourers' Friend Society, and the evidence taken before a Committee of the House of Lords upon the subject of the Poor Laws in 1831. [GARDEN HUSBANDRY.]

COTTBUS, a circle lying on both banks of the Spree, in the southern part of the Prussian province of Frankfort-on-the-Oder. It has an area of about 334 square miles, and, by the census at the close of the year 1831 contained 42,000 inhabitants, an increase of 2110 since the year 1826. The northern parts consist in general of elevated moors; the southern, of sandy flats: there is an abundance of timber. Besides the Spree, this circle is watered by the Mala or Malcke, and a number of rivulets. There are several large ponds or natural expanses of water, such as the 'Devil's Pond,' south of Pietz, the royal 'Carp Pond,' near Bahrenbrück, &c. The chief pursuits of the inhabitants are agriculture and grazing; the principal products are rye, potatoes, flax and hemp, tobacco, chicory roots, wine, and fish. The stock, at the close of 1831, consisted of 3568 horses, 15,566 horned cattle, and 18,373 sheep and goats. Operative industry is almost wholly confined to the towns; and the principal manufactures are woollens, linens, stockings, tobacco and snuff, leather, spirits, and beer. There is an iron-work near Pritz, with a high-blast furnace and 5 hammers, and 3 boiling-houses for tar. Good ironstone and peat are found at Werben. Besides the chief town, the circle contains Pritz on the Mala and on the canal of the Spree, with about 2100 inhabitants and 124 villages. Cottbus, the chief town, lies on the left bank of the Spree, in 51° 45′ N. lat. and 14° 22′ E. long., and is surrounded by high and strong walls. Its population amounts to about 8200 (in 1817, 6437, and 1831, 8046): it contains 4 churches, a gymnasium, an orphan asylum, and 2 hospitals. The inhabitants are employed in the manufacture of woollens, linens, beer, and brandy. It is the seat of a considerable transit-trade between the Elbe and Oder, as well as between Stettin and the eastern parts of Germany.

COTTESWOLD HILLS, THE, traverse the eastern part of Gloucestershire, beginning on the north near Chipping Cambden, and terminating a short distance north of Bath. Their whole length may be somewhat more than forty-five miles. They are divided into the upper and lower Cotteswolds. The upper extend from Chipping Cambden to Stroud, running nearly from N.N.E. to S.S.W. about twenty-five miles, and contain the highest portion of the ridge. Broadway Beacon, near the northern extremity, rises to 1086 feet; Cleeve Hill, east of Cheltenham, to 1134 feet; and Symmonds Hall, not far from Stroud, is 795 feet above high-water mark. The hills in this part are three or four miles across, and include many small valleys, to which agriculture was formerly limited, but in modern times it has been carried to the very summits of the hills; though the higher situations are much exposed to cold winds. The lower Cotteswolds, between Stroud and Bath, extend about twenty miles nearly due north and south. They hardly rise any where to 500 feet, and constitute a high ground from one to two miles wide. By the flat hills east of Malmsbury the Cotteswolds are connected with the hilly country along the Channel. The waters which descend from the western declivity of the Cotteswolds, which is the steep side, fall after a short course into the Severn. Those which descend from the eastern declivity form the upper branches of the Thames. These hills contain no minerals except freestone and limestone.

COTTI'N, SOPHIE RESTAUD, born in 1773, was brought up at Bordeaux by her mother, who was an accomplished and well-informed woman. At the age of seventeen she married Mr. Cottin, a wealthy Parisian banker, with whom she resided in the capital. Three years after, she lost her husband, which circumstance, added to the horrors of the revolution, induced her to retire to a cottage in the valley d'Orsay. To beguile her solitude she began to write a novel, 'Claire d'Albe,' which, notwithstanding the good intentions of the authoress, whose object was to point out the dangers of seduction, cannot be called moral, it being calculated to engage the sympathies in favour of the heroine, who is guilty of adultery. This bad taste in morality, of making vice interesting, is common to many, and some of the best, French novels, such as Rousseau's 'Julie,' Madame de Stael's 'Delphine,' and many others: it has also spread to English literature, and infected not only novels but poetry. A person is represented with a thousand amiable qualities, and one single vice; or with one single virtue, and a thousand crimes; the result is the same in both cases: our sympathies are excited in favour of the guilty, which is not the best way of forwarding the cause of virtue. In Madam Cottin this was only an error of judgment and inexperience, for her heart was pure, and her sentiments and conduct strictly virtuous. It is said that the publication of 'Claire d'Albe' was owing to a feeling of benevolence. A person of her acquaintance being proscribed during the revolution, stood in need of money to effect his escape; Madam Cottin hastily offered the sheets, which she had been writing for her amusement, to a bookseller, and gave the produce to the fugitive. Some say that 'Malvina' was the work which served this benevolent purpose. The subject of 'Malvina' is a woman married to a confirmed libertine, whose conduct drives her to insanity, from which she recovers only to die in the arms of her repentant husband. Her third work, 'Amelie Mansfield,' although cleverly written, is exceptionable on the same grounds as 'Claire d'Albe.' Madam Cottin afterwards wrote 'Mathilde,' a tale of the Crusades, which had great popularity. The charm of Madam Cottin's writings consists in her description of the feelings of the heart in trying circumstances: she always excels when she describes those of virtuous unsophisticated persons, for she then drew from the source of her own pure feelings, but she does not succeed so well in painting bad and stormy passions and worldly intrigues, to which she was entirely a stranger. Her last and best work was 'Elizabeth, or the Exiles in Siberia,' the characters and sentiments of which are most unexceptionable, the action well conducted, and the termination satisfactory. A delightful atmosphere of pure and almost infantine innocence seems to attend the heroine throughout her task of filial devotion. 'Elizabeth' is accordingly a work which is generally put into the hands of young persons, and has been translated into most European languages. The subject is a young girl, who is living with her exiled parents in Siberia, and who forms and executes the resolution of proceeding to Moscow on foot to ask their pardon of the emperor. It seems that in the beginning of the reign of the late Emperor Alexander, there was a young person, called Praskowja Lupolowa, who actually performed this journey of more than 2000 miles, and obtained the object of her petition. Madam Cottin has worked upon this fact, and embellished it with all the charms of description. The account of Siberia, and of the mode of existence of the unfortunate exiles, is pretty exact, except in one or two cases, as where, for instance, she speaks of avalanches falling from the mountains in Siberia, which is one of the flattest regions on the face of the globe. But her novels must be judged of as works of imagination, and as such they rank high in French popular literature. The style of 'Elizabeth' is considered more carefully correct and finished than that of her other novels. Madam Cottin, who was a Protestant, and had attentively studied the Scriptures, had begun a work intended to demonstrate the truth of the Christian religion by its sympathy with the best sentiments and affections of the heart. She had also begun a work on education. She did not live to finish either: she died in August, 1807, at the age of thirty-four, sincerely regretted by all who knew her. Her extreme modesty and total absence of ambition made her shrink from rather than court popularity and fame: most of her works were published anonymously. They have been since collected and published at Paris, in 5 vols. 8vo., 1817.

COTTON, a word derived from *Kutn*, or *Kutun*, one of the names given by the Arabs to this substance, is a filamentous matter produced by the surface of the seeds of various species of Gossypium. [GOSSYPIUM.] It consists of vegetable hairs, of considerable length, springing from the surface of the seed-coat, and filling up the cavity of the seed-vessel in which the seeds lie. Hairs [HAIRS] are extremely common on the surface of plants; frequently however they are unobserved, in consequence of their small number and minuteness; while on the other hand in some cases they give plants, such as the Mullein for instance, a remarkably hoary appearance. On the surface of seeds they are uncommon; and yet in the Malval alliance, to which the cotton plants belong, they not only exist abundantly on the seeds of that genus, but in several other species. Vegetable hairs are one of the many forms in which the cellular substance of vegetation is developed, and they consequently partake of two of the great characteristics of that form of tissue, namely, thinness and transparency. In the cotton they are long weak tubes, which, when immersed in water and examined under the microscope by transmitted light, look like flat narrow transparent ribands, all entirely distinct from each other, and with a perfectly even surface and uniform breadth; it is only occasionally that any appearance of joints is observable in these hairs, and when this happens the articulation is formed by a line, perpendicular, or nearly so, to the side of the tube. Sometimes a slight trace of fine grains is discernible in the interior, but more frequently the hairs seem empty; if strained singly they have little strength and readily break, and it is only when many are entangled together that they acquire any appreciable degree of strength. In all these points cotton differs from the vegetable matter that constitutes linen; the latter consists of woody tissue, in the state of long tubes, but is at once distinguished by the tubes adhering in bundles, which it is difficult under a microscope to break up into their component parts; the tubes are thick-sided, and will not acquire a riband-like appearance when viewed in water, but rather resemble extremely minute thermometer tubes. When they are jointed together the articulation is oblique, the ends of the tubes being pointed and overlying each other; and finally, in each particular tube of the woody tissue, delicate as it may be, there is a sufficiently appreciable degree of toughness when an attempt is made to break it. In short, cotton is a development of the parenchymatous part of the gossypium; linen is a form of woody matter; hence it is easy to distinguish with certainty linen from cotton manufactured articles, in cases of doubt; and hence also the well-known superiority of linen to cotton in strength: the latter is manufactured from the most delicate part of plants, the former from the toughest.

Cotton is produced by many different species and varieties of the genus Gossypium, under which article their differences, or at least what is known of them, will be explained. In this place a general description of the genus will be sufficient.

It consists of herbaceous, or nearly herbaceous plants, varying in height from three or four to fifteen or twenty feet, according to the sort; sometimes the branches become woody, but they always partake very much of the herbaceous character. The leaves are downy and more or less lobed, being sometimes however near the top of the stem undivided; at their base is seated a pair of awl-shaped stipules. The flowers are either yellow or dull purple, and have the ordinary structure of the Malvaceous family; each is surrounded by three heart-shaped bracts, which are more or less lacerated. The calyx is a bluntly five-toothed cup. The seed-vessel is a capsule opening into from three to five lobes, and then exposing many seeds enveloped in cotton, which sometimes adheres to them so firmly that it is separated with difficulty; sometimes it parts freely from them; in some sorts it is long and in others comparatively short, giving rise to the commercial names of long staple and short staple.

The sorts of cotton-plants are extremely numerous, but never having been critically and comparatively examined, they are in great confusion. And yet it is a point of the first consequence to ascertain the exact nature of their differences, and to name them with rigorous precision; for it is thus only that knowledge can be acquired of the kinds that yield the numerous qualities of cotton now in the market, and that the cultivator can be enabled to improve his plantations. But, as Professor Royle has very correctly observed, 'there are great, and in some respects insurmountable difficulties, as botanists have generally neglected the subject, and omitted mentioning the cultivated species; while cultivators have used provincial names, or applied new ones of their own, to the exclusion of any notice of the names in use among botanists. This has rendered it impossible for others to ascertain to what species their otherwise valuable observations refer. The celebrated De Candolle has admitted thirteen species, observing that they are all uncertain, and that no genus more requires the labour of a monographist; two additional species have been described by Dr. Roxburgh, one by Raeusch, and another in the *Flore de Sénégambie*. Dr. Von Rohr describes twenty-nine species or varieties, Mr. Badier eighteen, and Mr. Bennet mentions that he knew more than 100 kinds, and that they appeared to him never-ending.' Mr. Royle himslf fixes the supposed species, as far as he could determine them, at eight.

This is certainly not creditable to the managers of colonial gardens; it says little for the good sense of the superintendents of those establishments, where alone the subject can be investigated, that there should not to this hour be even one good series of experiments, except Dr. Roxburgh's, upon record, regarding a plant of such immense importance as cotton. In the West Indies there have been public botanic gardens at Jamaica, St. Vincent's, and Trinidad; the last at least remains. In that situation all the varieties of cotton from the islands and the main land of America might be cultivated side by side, and in the East no place could be more favourable for the comparison of all the sorts found in India and Africa than the botanic garden of the Mauritius. The results could without difficulty be accurately compared, and in six or seven years this great desideratum in commercial knowledge might be supplied.

Cotton-plants are found wild in both the old and new world. Herodotus and Arrian speak of the cotton-plant as indigenous in India, and the linen found in Peruvian tombs sufficiently attests its having existed in that country long before it could possibly have been carried to America by eastern intercourse. In fact the wild American cotton-plants are specifically different from those of the old world; but at the present day the cotton of the West is cultivated in Asia and Africa, while that of the East has long since been introduced to the American plantations.

The situations in which cotton-plants have been advantageously cultivated are included between Egypt and the Cape of Good Hope in the Eastern, and between the southern banks of the Chesapeak Bay and the south of Brazil, in the Western hemisphere. It has not been found to succeed beyond the parallels that limit those countries. In the equinoctial parts of America Humboldt found it at 9000 feet elevation above the sea; in Mexico as high as 5500 feet; and Professor Royle saw it at the elevation of 4000 feet in the Himalaya. It seems generally to prefer the vicinity of the sea in dry countries, and the interior districts of naturally damp climates: thus, while the best cotton is procured in India from the coast of Coromandel, or other maritime districts, and in the southern states of the American Union from certain coast-islands, the coast cotton of Pernambuco is inferior to what is produced in the interior of that country. These facts lead to the inference that it is not merely temperature by which the quality of cotton is affected, but a peculiar combination of heat, light, and moisture; the most favourable instance of which may be assumed to be the coast of Georgia and the Carolinas, and the worst to be Java and the coast of Brazil.

That this should be so, would, in the absence of positive evidence, be probable, considering the nature of cotton We have seen that it is a hairy development of the surface of the seed; and nothing in the organization of plants is more affected by the situation they live in than their hairs: thus scarcely any water-plants have hairs, except in a slight degree, while the same species transferred to a dry exposed station is closely covered with such organs, and *vice versâ*. The quantity of hair is also affected in an extraordinary degree by local circumstances. The Venetian sumach plant, when in flower, has its flower-stalks nearly naked; a large proportion of the flower-stalks has no fruit, and becomes covered with very copious long hairs, whence the French call this plant *Arbre à perruque;* but those flower-stalks which do bear fruit remain hairless. In this case the local cause is the abundant food thrown by the system of the sumach-plant into the flower-stalks for the nourishment of the fruit; and the fruit not forming, the food intended for it is expended in the formation of hairs upon the surface of the flower-stalk: this is a local circumstance that may be referred to the class of accidents. But local circumstances conducive to the formation of cotton in excess may be permanent, and derived from the situations in which the plants grow. In a damp cloudy climate the food procured from the soil may not be concentrated upon the surface of the seed, but may be expended in the production of excessive quantities of leaves, and of proportionally few flowers; or it may pass off into the atmosphere in the form of mere exhalation, a small proportion only being consolidated; or in a dry climate the soil may not be able to furnish food enough to the plant out of which to form more cotton than it is absolutely its specific property to produce under any circumstances. Or, lastly, there may be a mean where the powers of vegetation are called into their utmost activity by warmth and abundant food, and where, nevertheless, the dryness of the atmosphere and the brightness of the sun, constantly acting upon the surface of the cotton pods (seed-vessels), may drive back the juices from the surface of the latter to that of the seeds, and thus augment the quantity and improve the quality of the cotton itself: this may explain the action of climate upon this substance.

The question is however rather more complicated; the different specific qualities of different varieties of the cotton-plant must be also taken into account. It has already been seen that a considerable number of varieties of cotton is certainly cultivated, although so little is correctly known about them. In some of them the cotton is long, in others it is short; this has it white, that nankeen-coloured; one may be cultivated advantageously where the mean winter temperature does not exceed 46° or 48°, and another may require the climate of the tropics. This is just what happens with all cultivated plants. Some vines will produce only sweet wine, others only hard dry wine, and some are suited only to the table; some potatoes are destroyed by a temperature of 32°, while others will bear an average English winter; only one kind of wheat produces the straw from which the fine Leghorn plait for bonnets is prepared. But to multiply such instances is unnecessary. There can then be no doubt that the quantity of cotton will depend upon climate in part, and upon the specific properties of different varieties also in part.

For further information and numerous details upon this subject, we refer the reader to a very important dissertation upon the cotton cultivation of India, by Professor Royle, in his *Illustrations of the Botany and other branches of the Natural History of the Himalayan Mountains, and of the Flora of Cachmere*, article 'Malvaceæ.'

The *Cotton-plant*, or Gossypium, must not be confounded with the *Cotton-tree*, Bombax, or Eriodendron; the latter has also cottony seeds, but they cannot be manufactured.

COTTON CULTIVATION AND TRADE. Cotton is called, in French, *Coton;* German, *Baumwolle;* Dutch, *Katoen, Boomwol;* Danish, *Bomuld;* Swedish, *Bomull;* Italian, *Cotone, Bambugia;* Spanish, *Algodon;* Portuguese, *Algodao;* Russian, *Chlobtschataja Bumaga;* Polish, *Bawelna;* Hindustani, *Rûhi;* Malay, *Kapas;* Latin, *Gossypium*.

The distinctive names by which cotton is known in commerce are, with the following two exceptions, derived from the countries of their production. The finest kind, which commands the highest price, is called sea-island cotton, from the circumstance of its having been first cultivated in the United States of North America, in the low sandy islands on the coast, from Charleston to Savannah. It will not flourish at a distance from the sea, and it is said that its quality is gradually deteriorated in proportion as the plants are removed from 'the salutary action of the ocean's spray'; it succeeds only in South Carolina, Georgia, and Florida. This cotton is composed of filaments longer than those of any other description, which circumstance, joined to its even and silky texture, fits it for the production of the finest yarns. The seed is black, and in the southern states of North America it is thence frequently called 'black-seed cotton,' to distinguish it from the short-staple cotton produced in the interior of those states, and which, from a like natural cause, is distinguished as green-seed cotton. The seed of the sea-island cotton is sown every year; but the plant when cultivated within the tropics will live and yield harvests for several years in succession. It is supposed to have come originally from Persia. It was taken from the Island of Anguilla to the Bahamas for cultivation, and was first sent thence to Georgia in 1786: it is not said how the seed found its way to the little island of Anguilla: the annual average crop does not exceed 11,000,000 pounds.

Upland or Bowed Georgia cotton, the green-seed kind, has received its name of *upland* to distinguish it from the produce of the islands and low districts near the shores. The expression bowed was given as being descriptive of the means employed for loosening the seed from the filaments, which was accomplished by bringing a set of strings, attached to a bow, in contact with a heap of uncleaned cotton, and then striking the strings so as to cause violent vibrations, and thus open the locks of cotton and cause the seeds to be easily separable from the filaments. The remaining kinds of cotton now brought to English markets are distinguished by names so plainly descriptive of the countries of production, that it is not necessary to offer any description of them with that view.

The materials for the early history of the cultivation and use of cotton are very scanty. In India and many of the islands in the Indian Ocean, the plant has been cultivated, and its filaments have been spun and woven, from time immemorial. In Mexico the Spaniards found cotton cloths in common use at the time of their conquest of the country. The Egyptians were acquainted in the time of Pliny with the use of cotton; but the manufacture of textures of this material must have been introduced among them at a period not so remote as the æra which produced many of the remains of that people which have been handed down to us. Such mummy-cloths as have been submitted to microscopic examination are all linen; and while delineations of the flax plant are commonly found in Egyptian paintings, none of the cotton shrub has been discovered. It is said that the cotton plant was very early known in China, and cultivated as an ornamental garden shrub, but that its filaments were not brought to use until the thirteenth century of the Christian æra, when its cheapness, as compared with wool and silk, caused it to rival those products, notwithstanding the opposition offered to its introduction through the generally unchanging habits of the people. More than 300 years before the date just mentioned, the plant was cultivated and its produce made into clothing in Spain under the dominion of the Moors. At that time the manufacture of cotton cloths was carried on extensively at Seville, Cordova, and Granada. In the Island of Sicily, then in possession of the Saracens, the cotton plant was cultivated. The mutual repugnance to each other of the Mohammedans and Christians was doubtless the cause of this valuable plant not having been usefully known at that period in other parts of Europe. The manufacture of cotton goods is said to have existed in Italy at the beginning of the fourteenth century; but there appears so much confusion in the names and description of the various tissues then known in commerce, that it is not possible to speak with much confidence on the subject.

It is not until towards the middle of the seventeenth century that we find any distinct mention made of the cotton manufacture as being carried on in England, although it has been shown by Mr. Baines that *cotton wool* was brought hither from the Levant and manufactured in Manchester at a somewhat earlier period.

The limited degree and the mode in which cotton was used for the production of tissues in this country, up to the time of Arkwright, has already been shown in this work. [ARKWRIGHT.] The cotton goods of which mention is made in the early history of the manufacture were mixed goods, of which the warp was composed of linen and only the weft of cotton, the mode of spinning then in use not giving sufficient strength to fit the latter for being used as warp. This difficulty was surmounted by the invention of Arkwright, whose first patent was obtained in 1769, from which time cotton fabrics have been made exclusively with that material. The progress of the manufacture did not at first give promise of the rapid extension which it afterwards exhibited. In 1764 the quantity of cotton imported was 3,870,392lbs., and the annual average from 1771 to 1775 did not amount to one million of pounds beyond that quantity. In the five following years the annual average quantity was no more than 6,766,613; but in 1790 the quantity used was 30,603, 451lbs., and at this rate the manufacture continued stationary during the remainder of the century if the yearly average is taken. In 1800, the last year of the last mentioned series, the quantity was above 50 millions of pounds. From that time until the close of the war, in 1814, the advance of the manufacture was unimportant, the annual average consumption being 66 millions of pounds; but with the return of peace an extraordinary impulse was given to the trade, and the annual average consumption of cotton, taken in periods of five years, has been as follows:—

1815 to 1819	. . . .	118,267,611 lbs.
1820 to 1824	. . . .	152,201,824 „
1825 to 1829	. . . .	205,665,011 „
1830 to 1834	. . . .	280,918,826 „
And in 1835 the consumption was,		326,407,692 „

The following statement of the production of cotton in various parts of the world, at different periods during the past half century, is taken from a collection of 'tables and notes on the cultivation, manufacture, and foreign trade of cotton,' compiled by order of the American congress, and presented to the House of Representatives by Mr. Levi Woodbury, the secretary of the United States' treasury. These tables appear to have been compiled with great care and industry, and they present the most complete view of the subject which has hitherto been offered. The following table, in which round numbers are used, must evidently be taken as only an approximation to the truth.

Years.	United States of America.	Brazil.	West India Islands and Colonies.	Egypt.	Other parts of Africa.	India.	Other parts of Asia.	Mexico and South America (exclusive of Brazil).	Other parts of the World.	Total production of Raw Cotton.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1791	2,000,000	22,000,000	12,000,000	..	46,000,000	150,000,000	190,000,000	68,000,000	..	490,000,000
1801	48,000,000	36,000,000	10,000,000	..	45,000,000	160,000,000	150,000,000	56,000,000	15,000,000	520,000,000
1811	80,000,000	35,000,000	12,000,000	..	44,000,000	170,000,000	146,000,000	57,000,000	11,000,000	555,000,000
1821	180,000,000	32,000,000	10,000,000	6,000,000	40,000,000	175,000,000	135,000,000	44,000,000	8,000,000	630,000,000
1831	385,000,000	38,000,000	9,000,000	18,000,000	36,000,000	180,000,000	115,000,000	35,000,000	4,000,000	820,000,000
1834	460,000,000	30,000,000	8,000,000	25,000,000	34,000,000	185,000,000	110,000,000	35,000,000	13,000,000	900,000,000

The cultivation of cotton has lately become an object of attention in Peru, and it appears probable that considerable supplies may be sent thence to Europe. The plant may be successfully cultivated along the whole coast of Peru. The quality of the produce is said to be equal to that of Upland Georgia cotton, some shipments made in 1835 having sold at the same price as Georgia cotton. The quantity exported from Peru in that year was 800,000 lbs.

A further table is given by Mr. Woodbury, showing the distribution of cotton at various periods from 1770 to the present time. It may suffice to give these particulars for one year (1834); the difference between the quantities produced in and exported from the different countries represent the probable consumption in the places of cultivation.

Exports from the United States to England . .	266,750,000 lbs.	lbs.
„ „ „ to France . .	79,900,000	
„ „ „ to other places .	20,000,000	
Total from the United States		366,650,000
Exports from India to England	32,000,000	
„ „ to China	40,000,000	
Total exports from India		72,000,000
Brazil to England		18,000,000
West Indies to England		4,000,000
Brazil and West Indies to France		4,000,000
Egypt and Turkey to England		1,500,000
„ „ to France		7,000,000
		lbs. 473,150,000

It appears from the foregoing figures that rather more than two-thirds (68 per cent.) of all the cotton sent away from the places of production are shipped to England. It is further remarkable, that while the production of this article has increased in the United States until it now equals the production of the whole world as it existed in 1770, the quantity grown in all other countries, with the exception of India and Egypt, has materially decreased. This result has been attributed to various causes, among which may be mentioned the good quality of American cotton, the low price of land there, and the great improvements that have been made in cleaning the cotton from its seed by means of Whitney's saw-gin, introduced in 1793. It is evident however that the greater part of these advantages might have been shared by many other countries in which the soil and climate are equally favourable for this branch of husbandry: and it will probably be more in agreement with the fact if we attribute the success of the American planters to their greater intelligence and industry, seconded by the commercial enterprise by which their country is characterized.

During the period in which the increased production has been going forward with the greatest rapidity in America, the prices have been continually declining. In the table of prices given by Mr. Woodbury as those of ited States, at the places of exportation, and in- all kinds of cotton, it is shown that the average each period of five years, from 1791 to 1835, has follows, viz.:—

per lb.	per lb.	per lb.
to 1795...15⅝d.	1806 to 1810... 9½d.	1821 to 1825...8d.
to 1800...18¼d.	1811 to 1815... 7¼d.	1826 to 1830...5d.
to 1805...12¼d.	1816 to 1820...13d.	1831 to 1835...6d.

higher prices obtained in the earlier years of this ust not be taken altogether as the measure of the s' gains; but there can be no doubt that those gains fficiently great to stimulate production; and if the es obtained from Mr. Woodbury's tables and other are to be relied on, there is no reason to fear that ket value of their produce is yet so far reduced as k the extension of cotton cultivation in the south- states, and prevent it from keeping pace with the ng demands of European manufacturers. 'Where ds and labour were low, as in Mississippi and Ala- few years ago, two cents (one penny) per pound for n the seed, or eight cents when cleaned, would pay ex- It is supposed to be a profitable crop in the south- states, at ten cents per pound.' (Woodbury's *Tables*, e 17.) An American gentleman, Mr. Joshua Bates, partner in the house of Baring and Co., stated in ence before the Select Committee on Manufactures, rce, &c., in 1833, that 'it is understood that even s or three-pence per pound is a price at which the can gain money in the valley of the Mississippi.'

al cotton of inferior quality can, it is said, be raised e half-pence per pound, and delivered in England lvance of one penny upon that price. Good Surat s said to cost two-pence half-penny per pound, de- at Bombay. The cost of production in our West lonies is considerably greater, and the cultivation n has consequently been for the most part aban- y the British planters.

fresh brought under cultivation in the United ill yield on an average from 1000 to 1200 pounds of cotton with the seed, which will yield of clean rom 250 to 300 pounds. In the old states, the is not more than one-half this quantity. One able- abourer is sufficient for each eight acres of land, if in the lighter part of the work by the aged and nd the young people who belong to their families; le will, at the same time, be able to cultivate from ight acres of provision ground. The proportion of lied labourers in each 100 of the entire working po- of the cotton-growing districts in America is 32; portion of young persons not yet arrived at their ngth, and of elderly people still capable of some f labour, is 25; the remaining 43 are composed of under fourteen years of age, and superannuated none of whom are capable of any but very light ch as weeding and picking the cotton. Captain all has given the details of a plantation where 200 re under cotton cultivation, on which the entire of negroes was 122; of these 48 were children urteen, and four were wholly superannuated. Of aining 70 only 39 were considered 'full hands,' 16 ree-quarter hands,' 11 'half-hands,' and 4 'quarter- the whole being equal to 57¼ able-bodied labourers. portion of labourers is greater than that first stated able-bodied labourer to eight acres, which rests e authority of Mr. Woodbury's tables. On the thority we are told that the whole quantity of land d for cotton in the United States at this time hould be estimated at two millions of acres; that tal employed for the purpose is from 800 to 900 of dollars; and that the whole number of persons engaged in field labour, picking, and otherwise in the cultivation of cotton, and raising their own s, is about 680,000. If to these are added the e infirm, and the very young children composing ilies of the labourers, 'besides overseers, owners, r respective families dependent on the cotton crop, sumed that a million of persons are now engaged in ing of cotton in the United States.'

elative value of the kinds of cotton more commonly ed for sale and use in this country, will be seen in wing list of prices quoted by the brokers of Liver- greatest cotton market in this kingdom, or indeed orld, on the 13th January, 1837.

	s.	d.		s.	d.	
Sea Island	2	1	to	3	0	per lb.
Demerara and Berbice				1	1	
Egyptian	0	11½		1	4½	
Pernambuco and Ceara	0	10⅜		1	1	
Bahia and Macaio	0	9		0	11½	
Maranham	0	10		1	0½	
Mobile and Alabama	0	7½		0	11½	
New Orleans	0	7¾		0	11½	
Upland Georgia	0	7¼		0	11	
Common West India	0	10		0	11½	
Surat	0	4¾		0	7¾	
Madras						

More than four-fifths of all the cotton brought into the United Kingdom is of the growth of the United States of America. The importations during 1835 were:—

From Egypt and ports in the Mediterranean	5,181,017 lbs.
„ East India Company's territories	41,429,011
„ British West Indies	1,815,270
„ Brazil	24,986,409
„ United States of America	284,455,812
„ Other places	5,835,444
Total	363,702,963

The growth of this trade has been rapid beyond all commercial precedent. In 1786 the total imports were somewhat less than 20,000,000 pounds, no part of which was furnished by North America. Our West India colonies supplied nearly one-third, about an equal quantity was brought from foreign colonies in the same quarter, 2,000,000 pounds came from Brazil, and 5,000,000 pounds from the Levant. In 1790 the importations amounted to 31,447,605 pounds, none of which was supplied by the United States. In 1795 the quantity was only 26,401,340 pounds. In this year a commercial treaty was made between the United States of North America and Great Britain, by one article of which, as it originally stood, the export was prohibited from the United States in American vessels of such articles as they had previously imported from the West Indies. Among these articles cotton was included, Mr. Jay, the American negotiator, not being aware that cotton was then becoming an article of export from the United States. In 1800 the imports had more than doubled, having reached 56,010,732 pounds. This was the first year in which any considerable quantity was obtained from America; the imports from that quarter were about 16,000,000 pounds. The progress of this trade during the present century is shown by the following table, exhibiting the imports at intervals of five years:—

	From all places.	From the United States.
1805	59,682,406 lbs.	32,500,000 lbs.
1810	132,488,935	36,000,000
1815	99,306,343	45,666,000
1820	151,672,655	89,999,174
1825	228,605,291	139,908,699
1830	263,961,452	210,885,358
1835	363,702,963	284,455,812

The quantities actually employed in our manufactories in different years during the same period and at equal intervals have been as under:—

1800,	51,594,122 lbs.	1820,	152,829,633 lbs.
1805,	58,878,163	1825,	202,546,869
1810,	123,701,826	1830,	269,616,640
1815,	92,525,951	1835,	326,407,692

The rapid extension thus shown has altogether resulted from the inventions of Hargreaves, Arkwright, Crompton, and others, in spinning machinery, and more recently from the invention by Dr. Cartwright, since perfected by other mechanicians, of the power-loom. But for these inventions it would have been impossible for our artizans to have competed successfully with the spinners and weavers of India, from which country we previously received our supply of muslins and calicoes. The wonderful proficiency of the Hindus in this branch of manufacture and the low rate of wages among them have, by means of our inventions, been so completely overcome, that not only have we ceased to import for use the muslins of India, but have for many years sent great and continually increasing shipments of those goods to clothe the natives of India. These shipments were quite inconsiderable until the partial opening of the trade with India in 1814, in which year our looms supplied 818,202 yards of cotton goods to India. Two years afterwards the shipments were doubled. In 1818 they amounted to about 9,000,000 yards, and from that time the shipments have increased so greatly, that in 1835 the markets of India and China took from us 62,994,489 yards, the declared value of which amounted to 1,660,806*l.*, exclusive of 8,233,142 lbs. of cotton yarn, valued at 603,211*l.* Considerable shipments of cotton piece goods are still made from India to this country, but nearly the whole are re-exported.

It is owing to the low price of our manufactures, more perhaps than to their comparative excellence in other respects, that this commercial revolution has been brought about. The hand-spun yarns of India, produced as they are from cotton of a quality inferior to that employed in our factories for the finer kinds of fabrics, are more durable and are capable of being converted into cloths more curiously fine than have hitherto been woven in England; but so great is the economy attained in the various processes of our manufacture, that this advantage of durability has been more than counterbalanced.

The quantity of cotton manufactured in various countries, as given in Woodbury's Tables for the year 1833, was as follows:—

England	284,500,000 lbs.
France	87,000,000
United States . . .	80 to 85,000,000
India and China . . .	242,000,000
Mexico and South America, including Brazil .	35,000,000
Germany	36,000,000
Turkey and Africa . .	42,000,000
Spain	10,000,000
Prussia	20,000,000
Elsewhere	40,000,000

The number of persons employed in and connected with the cotton manufacture, and the number of spindles in use in some of these countries, is stated in the same tables as follows:—

		Persons.	Spindles.
England . .	1833	1,500,000	9,500,000
United States	1831	200,000	1,750,000
France . .	1834	600,000	3,250,000
Switzerland .	1824		259,200

It has been computed that the produce of thirty-seven spindles is required for the supply of one loom; but this proportion partly depends upon the fineness of the yarn, and is not applicable where power-looms are used, the quantity of cloth woven in these being greater than that made in hand-looms in the proportion of five to two. The number of power-looms used for weaving cotton at the end of the year 1835, in the United Kingdom, was 109,626, of which 90,679 were in England, 17,531 in Scotland, and 1,416 in Ireland. The number of persons employed in cotton factories in the same year was 220,134. The proportions in the three divisions of the kingdom were:—

	Males.	Females.	Total.
England	88,327	94,916	183,243
Scotland	10,529	22,051	32,580
Ireland .	1,639	2,672	4,311
	100,495	119,639	220,134

These numbers do not include persons employed in the processes of dyeing and printing, hand-loom weavers, stocking-knitters, nor makers of bobbin-net.

The first cotton-mill built in the United States was set to work in Rhode Island in 1790. Attempts had been made in the previous year 'to get the machinery into operation by water, by means of models for carding and spinning, which the state of Massachussetts had procured from abroad; but no mill was begun until the autumn of 1789, when one was commenced by the assistance of Mr. Slater, who had then recently come from England. About this time a cotton-mill was erected at Beverley, Massachussetts, by an incorporated company.'

The manufacture made at first so little progress in the United States, that up to 1808 not more than 15 spinning mills had been erected. There was a great increase in 1812, occasioned by the war between England and America; again from 1820 to 1825 much capital was applied to this object, and a further extension of the manufacture was made in 1831 and 1832; in the first of which years we have seen that, according to Mr. Woodbury, the number of spindles in use in the United States was between one-fifth and one-sixth of the number used in this country. The great demand for cotton goods within the States has hitherto prevented any very considerable exportation; the total annual value of the shipments made between 1826—previously to which year the official tables are silent as to any exports—and 1832, was under 250,000*l.* In 1833 the value is given at 2½ millions of dollars (520,000*l.*), and in 1834 at 2,200,000 dollars (458;000*l.*). The greater part of these shipments were made to Mexico and the South American states.

The quantity of cotton imported into France in 1787, the earliest year as to which any returns are given, was 4,466,000 kilogrammes, or not quite ten millions of pounds; and it was not until after the return of peace that any decided augmentation occurred in this branch of industry. In 1815 the importation of cotton was 16,414,606 kilogrammes—36 millions of pounds; in 1820 it had reached 20,000,000 kilogrammes; in 1825 it was still below 25 millions; in 1830 it amounted to 29¼ millions, and in 1833 reached 35,609,818 kilogrammes (78½ millions pounds). In the same years the weight and value of cotton goods exported from France were as follows:—

	Kilogrammes.	Francs.
1787 .	. .	. 21,227,200
1815 .	[illegible],415,884	. 8;698,840
1820 .	1,439,358	. 29,120,058
1825 .	1,914,718	. 43,190,495
1830 .	2,454,569	. 55,686,150
1833 .	2,556,527	. 57,007,133

If we compare the quantities here stated for 1833 with the consumption of our own factories and the shipments made from the United Kingdom in the same year, it will be seen that the quantity of cotton spun in France was equal to, or rather more, than one-fourth of that used in our mills, and that the value of the exports from France was not quite equal to one-eighth part of the value of the shipments from England.

The only other country in which the cotton manufacture is prosecuted with a view to the supply of foreign markets, is Switzerland. The entire and absolute freedom of trade allowed throughout the Swiss cantons prevents our giving any statement of the quantity of the raw material at any time imported, or of manufactured goods exported. The cotton manufacture is of modern introduction: the first spinning machine was established at St. Gall, in the year 1800; but Switzerland still imports considerable quantities of foreign-spun yarns for the use of her hand-loom weavers, as well as of power-loom cloths from England, which are dyed and printed, and afterwards exported. Finding themselves shut out from the greater part of the markets of Europe by heavy duties and prohibitions, the merchants of Switzerland have directed their attention to the supply of North and South America, and partially of India also. The perfection to which dyeing and cotton-printing have been brought in the cantons gives them great advantages. So great is the degree of perfection attained in the application of the colour denominated Turkey red, that calicoes and prints of that colour are imported from Switzerland into England: the same may be said of embroidered muslins.

The cotton manufacture is the most generally diffused of all the branches of industry upon which the production of clothing depends. The greater part of the countries in which it is carried on limit their production of cotton goods to the wants of their own people. The perfection to which the spinning processes have been carried in this country has made the greater part of the world in some measure dependent upon our cotton mills for the finer descriptions of yarns; and a sufficient indication of the universality of cotton-weaving may perhaps be afforded by inspection of the table given under the head of COTTON MANUFACTURES, and which contains a statement of the quantities of different descriptions of cotton fabrics, and of twist and yarn, exported from the United Kingdom during the year 1835.

COTTON SPINNING. Among all the antient mechanical arts there were few so simple as that of converting the downy filaments of the cotton plant into a continuous thread according to the methods generally used before the time of Hargreaves and Arkwright, and which methods are still employed in eastern countries. There are, on the other hand, few processes for the performance of which the inventive powers of man have, since that period been more taxed, in this country and during this age of invention, than for the cheap and perfect production of cotton twist and yarn.

The use of the spindle and distaff was superseded in England by the spinning-wheel, in or soon after the reign of Henry VIII. The next improvements in this useful art were those of Hargreaves and Arkwright, the introduction of which is noticed under the head COTTON MANUFACTURES. Since that time the inventions by which the art of cotton-spinning has been advanced in this country have been so numerous, that a large volume would hardly suffice for their full explanation; all that can here be attempted is a description of the various processes now in use in the best regulated cotton-mills of Lancashire, and a summary notice of the more striking effects which have resulted from their introduction.

Owing to the great variety generally found in the quality of different bags of cotton, which would otherwise occasion a corresponding difference in the quality of the yarn produced, the contents of several bags are mixed together in a heap. This is done by spreading out the contents of each bag in a horizontal layer of uniform thickness, the contents of the several bags forming separate layers and resting one upon the other, so that the number of layers corresponds to the number of bags. In making this heap, which is called a *bing* or *bunker*, the several layers are to be trampled or pressed together somewhat in the manner of building a hay-stack. The cotton of which the bing is composed is then torn down by a rake from top to bottom. It is evident that in its progress a portion of each horizontal layer will be brought away, and that thus, if the work be skilfully done, the contents of the different bags must be collected together in a mass of uniform quality.

It is customary to mix in this manner different descriptions of raw cotton for the production of various qualities of yarn, and some skill on the part of the manufacturer is called for in order to produce a mass that will answer the intended purpose at the least possible cost. The practice of different spinners varies much in this respect, but it is considered proper as a general rule to mix together only such qualities as are similar in the length of their staple. The waste cotton produced in the previous operations of the mill are mixed in the bing in certain proportions for making the lower qualities of yarn. For the higher numbers, and for twist which is used for warp, finer qualities of cotton are required than for low numbers or for weft.

The scutching machine is used to open the locks of cotton and separate its fibres, while at the same time it separates from it any sand or seeds which it may contain. This machine consists of feeding-rollers made of wood and placed at a short distance from each other, through which the cotton is made to pass slowly, after passing through which it is struck by a set of beaters made to revolve 1600 or more times in a minute. The cotton is thus passed through two sets of rollers, and subjected to two sets of beaters It is then taken to the spreading-machine, the use of which is to spread a given weight of cleaned cotton into a given length and breadth, in order to its being presented of uniform thickness to the next machine—the carding-engine. The spreading-machine is not universally used. Where the heavier quality of yarn is spun it answers sufficiently well, and effects an adequate saving of labour, but for fine yarns, where the greatest precision is required in order to produce regularity in the size of the yarn, machine-spreading does not answer so well as hand-spreading. The cotton must be weighed very accurately before it is put into the spreading-machine, and when perfectly spread is called a *feed*, the thickness of which will of course be regulated by the weight of cotton supplied to the machine. This operation is repeated continuously, so that an unbroken sheet of cotton passes through the machine and is wound on a wooden roller. In this form the cotton is called a breaker lap, and is then ready for the carding-engine.

Up to this stage the fibres of the cotton cross each other in every direction. The use of the carding-engine is to disentangle them, to draw them out and to lay them parallel to each other: properly speaking, this is the first operation of spinning, the previous processes being used only to open and clean the cotton. The card is a species of brush made of short wires passed through a sheet of leather and pointing all in one direction. In the early period of cotton-spinning in this country, these cards were nailed on small pieces of board with handles, and two of them were used together, one held in each hand. The first improvement made in this implement was effected about 1760, by James Hargreaves, who, a few years later, invented the spinning-jenny. This improvement in the cards consisted in having one of them greatly increased in size, and fixed; this was called the stock, and the other was suspended by a cord working in a pulley, fixed to the roof of the chamber; the effect of this arrangement was that two or more cards could be applied to the same stock. This modification was immediately followed by the greater improvement of cylinder cards; the father of the late Sir Robert Peel set up a machine of the kind at Blackburn in 1762, with the assistance of Hargreaves. The inventor of cylinder cards is not known with certainty. Mr. Baines ascribes the invention to Lewis Paul, who took out a patent in 1748 for improvements in carding. The carding-engine consists of a horizontal cylinder covered in its entire circumference with narrow fillet cards wound spirally round the cylinder, leaving an intervening space between the several spiral lines thus described on the surface of the cylinder. Over the cylinder is a concave frame, the interior surface of which is lined with cards, and the form of which corresponds to that of the cylinder. When the cylinder is made to revolve, the cards on it and on the frame work against each other, by which means the fibres of cotton are disentangled and properly arranged, as already mentioned. The cylinders, which are usually about 3 feet in diameter, and 3 feet long, are made to revolve at the rate of about 110 revolutions in a minute.

The cotton, in the form already described as a breaker lap, is led into the carding-machine by a slow motion through feeding-rollers, one inch in diameter, which revolve only twice in a minute. The fibres of the cotton are then immediately engaged by the wires of the main cylinder, and after being by their means properly arranged, are thrown off by its velocity to a second cylinder called a doffer.

When cylinder-cards were first used, hand-cards were employed to take off the cotton. Various contrivances were at different times adopted for improving this part of the process, until at length Arkwright contrived for the purpose a plate of metal toothed at the edge like a comb, which, instead of revolving as the former contrivances had done, was, by means of a crank, made to move rapidly in a perpendicular direction, and with slight but reiterated strokes on the teeth of the cards detached the cotton from them in a uniform fleece. This fleece is made to undergo compression on its passage to a roller, from which it is delivered in the form of a thick but soft thread, called a card-end, or sliver, into a tin can. The duration of the carding process is made to depend upon the quality of the cotton under preparation. If the fibres are short and coarse, the carding should be quickly performed, not indeed by accelerating the speed of the cylinders, but by taking the cotton faster off the cards.

The next operation is called drawing, and the machine by means of which it is performed is called the drawing-frame. The object of this drawing is to complete what has been begun by the carding-engine, viz., the arranging of the fibres of cotton longitudinally, in a uniform and parallel direction, and to remedy all existing inequalities in the thickness of the sliver. The drawing-frame acts upon the same principle as Arkwright's spinning-frame, two sets of rollers being employed moving with unequal velocities. In its passage through the first pair the sliver is simply compressed, but being drawn through the second pair with twice or thrice the original velocity, it is necessarily drawn out in the same proportion. In repeating this operation, which is called doubling, two, three, or a greater number of the drawings are passed through both sets of rollers; in the first they are made to coalesce, and in the second are again drawn out. This doubling and drawing process is repeated very frequently, in some cases as many as 1000 times, in order to correct every inequality in the thickness of the cord or sliver: up to this point the cotton has not been made to undergo any twist. This doubling and drawing process is of the utmost importance, and if ill or insufficiently performed, the yarn cannot prove of good quality.

Roving, the next step in the process, is a continuation of the drawing, with this only difference, that the cord, now called a rove or slub, being so much reduced in thickness that it will not otherwise hold together, a slight twist is given to it by passing it into a conical can, which, while receiving it, is made to revolve with great velocity. The rove thus slightly twisted, is wound upon bobbins by children, and is then ready for the spinning frame. About the year 1817, a machine called a *fly frame* was contrived for preparing rovings for inferior numbers of yarn. Instead of revolving cans, this frame is provided with a series of spindles, each of which is provided with a flyer, the revolutions of which give the requisite twist to the cord, which is delivered at once to the bobbin fitted loosely on the spindle. The *tube frame*, more recently introduced, is used for preparing yarns of all qualities. Instead of cans, this frame is provided with revolving horizontal cylinders, and by its means a much greater quantity of work can be done in a given time than with the fly frame. The rove which it produces has no twist, and is therefore very tender, and the quantity of waste which it occasions is greater than is otherwise experienced. The tube frame is an American invention, but has been improved in this country; a patent for these improvements was granted in 1829.

The principle of Arkwright's spinning frame has been already explained. [ARKWRIGHT.] The yarn produced by its means received the name of water-twist, from the circumstance of the machinery being at first set in motion by water power. The throstle-frame is the same in principle as Arkwright's invention, but the movement of the parts is simplified, so that the speed of the machine is increased, and a greater number of spindles may be driven with an equal amount of power; it was introduced about the year 1810. The mule-jenny, invented by Samuel Crompton, combines the essential principle of Arkwright's frame with the property of stretching possessed by Hargreave's jenny. By means of the mule-jenny, the roving is first drawn and then stretched. The effect of this improvement is to make the yarn finer, and of a more uniform tenuity. When delivered by the rollers, the thread is thicker in some parts than in others, and these thicker parts not being so effectually twisted as the smaller parts, are softer and yield more readily to the stretching power of the mule, and by this means, the twist becomes more equal throughout the yarn. Throstle-spinning is seldom employed for higher numbers than forty to fifty hanks to the pound, because smaller yarn would not have strength to bear the drag of the bobbin, but in mule-spinning no bobbin is used, and the yarn is wound or built upon the spindles without subjecting it to any strain. The spindles in this machine are regularly arranged on a carriage, which when put in motion recedes from the rollers with a velocity somewhat greater than that at which the reduced rovings are delivered from them; during this time the yarn is receiving its twist by the rapid revolving of the spindles, and when the rollers are made to cease giving out the rovings, the mule-jenny still continues to recede, but with a slower motion, and its spindles to revolve, and thus the stretching is effected. The distance which the spindles recede from the rollers while both are in action is called a stretch; this is usually about fifty-four or fifty-six inches; the space through which the mule moves greater than and during the giving out of the rollers, is called the gaining of the carriage; and the further space accomplished by the carriage after the rollers are stopped, is called the second stretch; during this latter part of their progress, the spindles are made to revolve much more rapidly than before, which is to save time. When the drawing, stretching, and twisting of the thread are thus accomplished, the mule disengages itself from the parts of the machine by which it has been driven, and then the attendant spinner returns the carriage to the rollers, again to perform its task. While returning to the roller, the thread which has been spun is wound or built on the spindle in a conical form, and is called a cop. The mule-jenny is a complex piece of mechanism, and requires to have all its parts very nicely fitted and adjusted. At first it was constructed with only twenty spindles, but by successive improvements has been made sometimes to contain upwards of 1000.

The last great triumph of invention connected with cotton spinning which it is requisite to notice, is the self-acting mule contrived by Mr. Roberts, of the firm of Sharp, Roberts, and Co., machine-makers in Manchester. The carriage of this mule, after having drawn out and stretched and twisted, the thread is returned again to the rollers by mechanical means without the guidance or intervention of any intelligent agent, the only attendance required being that of children to join such threads as may have been accidentally broken in the stretching. This self-acting mule is even more complex in its arrangements than the original machine, and hence great doubts were entertained as to its successful working. It is probably owing to the great care and ability shown by the inventor in their construction that these doubts have proved ill-founded. This invention in its improved form was secured by patent in 1830, and has already come extensively into use; its advantages as regards economy, and rendering the manufacturer independent of a class of workmen who have frequently proved refractory, are so great, that this machine will, as a matter of course be adopted in every case where new machinery is required; it is already (1836) used in more than 100 factories.

If the yarn spun with the mule-jenny be intended for use as weft in the factory where it is produced, the cops are at once applied to the shuttle, and of late it is sometimes the custom to export them in that form; but when intended for warp, and generally when exported, the yarn is reeled into hanks each 840 yards in length, for performing which operation a self-acting reel has been contrived. This process is attended by young women. The diameter of the reel is 4½ feet; when it has performed 80 revolutions, a lay is formed measuring 120 yards, and seven of these lays make up a hank. Each hank is separately tied round with a thread, and weighed to ascertain its fineness; the different sizes are then put by themselves and separately packed in paper bundles of either five or ten pounds weight.

Fine yarns are usually singed, in order to remove their loose downy fibres and to give them smoothness. This is accomplished by subjecting the thread to the action of a series of coal-gas flames, through which it is several times passed with great velocity.

Cotton thread is made by laying together two or more yarns of equal quality, and twisting them, for which purpose also machinery is employed. Previous to the doubling and twisting, the yarn is passed through a trough, containing a thin solution of starch; the twist is given in an opposite direction to that applied by the spinning machine, causing the thread to resemble in this respect organzine silk.

Scarcely any operation in a cotton mill is carried forward without the intervention of a machine, by which the work is done with greater precision, and also with greater celerity, and consequently greater economy. The packing of the hanks of yarn into bundles is the work of a *bundle press*, by means of which the hanks are pressed into a very small compass, the power of the machine enabling young females to exert quite sufficient strength for the purpose.

The degree in which the inventions that have here been noticed have reduced the expenses attending this branch of manufacture, is shown by the following statement, drawn up by Mr. Dugald Bannatyne, lately and for many years secretary to the Chamber of Commerce at Glasgow. Prices of cotton-yarn, 100 hanks to the lb., in the following years:—

	s.	*d.*			*s.*	*d.*	
1786 . .	38	0	per lb.	1799 . .	10	11	per lb.
1787 . .	38	0	,,	1800 .	9	5	,,
1788 . .	35	0	,,	1801 . .	8	9	,,
1789 . .	34	0	,,	1802 . .	8	4	,,
1790 . .	30	0	,,	1803 . .	8	4	,,
1791 . .	29	9	,,	1804 .	7	10	,,
1792 . .	16	1	,,	1805 . .	7	10	,,
1793 . .	15	1	,,	1806 . .	7	2	,,
1794 . .	15	1	,,	1807 . .	6	9	,,
1795* . .	19	0	,,	After many fluctuations, in			
1796 . .	19	0	,,	1829 . .	3	2	,,
1797 . .	19	0	,,	1832 . .	2	11	,,
1798† . .	9	10	,,				

The waste of material in spinning cotton is variously estimated. Mr. Kennedy calculated, in a paper contributed by him to the Manchester Literary and Philosophical Society, that the waste amounts to 1½ oz. per lb., or nearly one-tenth of the original weight; and this estimate is thought to be very near the truth.

The following statement, taken from the report of the commissioners appointed to inquire concerning the labour of children in factories, was designed to show, from actual returns made by a great number of manufacturers, the manner and proportions in which the different classes of work-people are employed in cotton mills, and the aggregate amount of their monthly net earnings throughout the kingdom.

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* Spun from Bourbon cotton.

† Spun from Sea Island cotton.

Employed in	Adults.		Children under 18 years of age.						Proportion whose age and sex are uncertain, from a deficiency in the returns.	Total number employed.	Aggregate amount of ½ monthly net earnings.
			Males.			Females.					
	Males.	Females.	In the direct employ of masters.	In the direct employ of operatives.	Employer uncertain.	In the direct employ of masters.	In the direct employ of operatives.	Employer uncertain.			
Cleaning and spreading cotton	1,330	2,319	951	3	31	345	6	13	..	4,998	£ 8,631 19 6
Carding	10,361	15,062	4,983	461	78	8,099	458	163	819	40,484	75,276 10 0
Mule-spinning	22,727	5,196	3,038	23,634	257	1,255	8,663	82	364	65,216	139,660 17 9
Throstle-spinning	793	3,000	1,409	25	100	2,203	19	160	..	7,709	11,615 10 1
Reeling	722	11,208	182	25	..	2,306	76	119	..	14,638	22,817 8 4
Weaving	20,440	28,566	4,581	2,582	204	12,109	4,261	119	2193	75,055	168,663 16 3
Roller covering	261	389	19	3	..	31	22	..	..	725	1,764 18 5
Engineers, &c.	3,759	34	151	9	19	3	..	..	..	3,975	15,987 0 9
	60,392	65,774	15,314	26,742	689	26,351	13,505	656	3376	212,800	£444,481 1 1

The following statement exhibits the actual working of a cotton-mill in Manchester, in the year 1834. The yarn made was all of fine quality; viz.

No. 130 to 150	5,038 lbs.
„ 155 to 160	16,478 „
„ 165 to 170	19,488 „
„ 175	21,679 „
Total quantity of yarn spun	62,683 „
Total weight of rovings	68,127 „
Waste (1.278 oz. per lb.)	5,444 „
Number of mule jennies	109
„ of spindles	32,448
Weight of yarn per spindle	1 lb. 14$\frac{8}{16}$ oz.
Number of spinners employed	56
„ of piecers employed	156
Total amount of wages paid	£5,894
Spinner's average net weekly earnings	24*s.* 8½*d.*
Cost of wages on each pound of yarn	1*s.* 10½*d.*

The relative cost of yarns of different degrees of fineness, the description of cotton used for their production, and the countries which are our chief customers for each quality, are as follows:—

Quantity of yarn.	Price per lb.	Growth of cotton employed.	Countries to which exported.
	d. *d.*		
Water twist, No. 12	12¼ to 13	North America, or India	Italy.
„ 20	13½ „ 14	ditto	Germany and India.
„ 30	16 „ 16½	ditto	Russia, Germany, India, and China.
Mule twist, No. 40	16 „ 16½	ditto	
„ 50	18¾ „ 19	ditto	
„ 60	21 „ 22	ditto	
	s. *d.*		
„ 70	2 2½	North America, or Egypt	
„ 80	2 5	ditto	Germany, Switzerland, Russia, and India.
„ 90	2 10	ditto	
„ 100	3 3	ditto	
„ 120	4 1	ditto	
„ 130	4 6	ditto	
„ 140	5 1	North America.	
„ 150	6 6	ditto	Switzerland and France.
„ 160	7 4	ditto	
„ 170	8 5	ditto	
„ 180	9 8	ditto	
„ 200	13 0	ditto	
„ 250	27 0	ditto	

The prices here stated were those obtained in January, 1836. It will be seen that the price of the same *count* is greater for water twist than for mule twist. The hardness and closeness of texture of the former better fits it for warps for heavy goods, such as fustians and for sewing cotton, while the lower numbers of mule twist are best adapted for weft in coarse goods, and the higher numbers for both warp and weft of fine cloths, such as muslins.

The rate of wages paid to persons of various ages in the cotton mills at Manchester, has been stated on the authority of the Factory Commissioners as under:—

	Average weekly wages. Males.		Females.	
	s.	*d.*	*s.*	*d.*
From 9 to 10	2	9¾	2	11½
„ 10 to 12	3	8	3	9½
„ 12 to 14	5	0¼	4	10½
„ 14 to 16	6	5½	6	4¾
„ 16 to 18	8	2½	8	0½
„ 18 to 21	10	4	8	11
„ 21 and upwards	22	5¼	9	6½

The Act of 1833, for regulating the labour of children in factories, forbids the employment in a cotton factory of any child under thirteen years of age for more than nine hours during the day.

It is a curious fact, that a great part of the yarn used for making very fine muslins at Paisley and Glasgow is spun in Lancashire. The machinery in the Scottish mills is equally well constructed, and the material used is of the same quality in both places; but the spinners in Lancashire who apply themselves to the production of fine yarn are comparatively few and selected from a greater number than find employment in Scotland, where the small proportion who attain the requisite sleight-of-hand are not able to produce fine yarns in sufficient abundance for the supply of the Scottish looms.

A great and increasing proportion of English spun yarn is every year exported to foreign countries. The exports since 1820 have been as follows:—

1820	23,032,325 lbs.	1828	50,505,751 lbs.
1821	21,526,369 „	1829	61,441,251 „
1822	26,595,468 „	1830	64,645,342 „
1823	27,378,986 „	1831	63,821,440 „
1824	33,605,510 „	1832	75,667,150 „
1825	32,641,604 „	1833	70,626,161 „
1826	42,189,661 „	1834	76,478,468 „
1827	44,878,774 „	1835	83,214,198 „

The table inserted under the head cotton manufactures, showing the exports of cotton goods generally in 1835, particularises the countries to which English spun yarn was sent.

COTTON MANUFACTURE AND TRADE. The use of cotton as a material for the production of woven fabrics was known in India and China for many centuries before its introduction into Europe. The earliest mention of cotton by the Greek writers is by Herodotus (iii. 106) in his brief notice of the usages of the Indi: he calls it (iii. 47) by the significant name of tree-wool (*εἴριον ἀπὸ ξύλου*), apparently not being acquainted with the native name. In the reign of Amasis, B.C. 563—525, cotton was known in Egypt, but it must have been imported, as there is no reason for supposing it was then grown in Egypt. Cotton cloths were, according to Arrian, among the articles which the Romans received from India, and there is no doubt the manufacture had been carried on in many parts of Asia, long before any extant notice of that quarter of the world being visited by Europeans. The perfection to which the weaving of cotton had then been brought by the natives of many parts of India, notwithstanding their rude and imperfect implements, attests at once their patience and ingenuity. In China, this manufacture is supposed not to have existed at all before the beginning of the sixth century of the Christian æra. The cotton plant was indeed known in that country at a much earlier period, but continued till then to be cultivated only as a garden shrub, and was not indeed propagated on a large scale until the eleventh century; at the present time nearly all the inhabitants of that populous empire are clothed in cotton cloths of home manufacture.

Before the discovery of the passage to India by the Cape of Good Hope, cotton wool is said to have been spun and woven in some of the Italian states, the traders of which were the channels through which the cotton fabrics of India were distributed to the different countries of Europe. Becoming thus acquainted with these goods, and having near at hand the raw material of which they were formed, it was natural that they should apply to the production of similar goods the manufacturing skill they had long possessed.

Baines has shown ('History of the Cotton Manufacture,') that the cotton plant was extensively cultivated, and its produce manufactured, by the Mohammedan possessors of Spain in the tenth century. This branch of industry flourished long in that country. In the thirteenth century, the cotton manufacturers formed one of the incorporated companies of Barcelona, in which city two streets received names which point them out as the quarter in which the manufacturers resided. The cloths made were mostly of coarse texture, and a considerable quantity was used as sail-cloth. The name *fustians*, from the Spanish word *fuste* signifying 'substance,' was borrowed from the Spanish weavers, and is still used to denote a strong fabric made of cotton. The intercourse between the Mohammedan possessors of Spain and the Christian inhabitants of other European countries was so small, owing to religious prejudice, that the arts which long flourished among the former, did not extend themselves to the latter; the traffic of Andalusia was all carried on with Africa and the East.

From Italy the art made its way to the Netherlands, and about the end of the sixteenth or the beginning of the seventeenth century was brought thence to England by protestant refugees. Lewis Roberts, in 'The Treasure of Traffic,' published in 1641, makes the earliest mention extant of the manufacture in England. He says, 'The town of Manchester buys cotton wool from London that comes from Cyprus and Smyrna, and works the same into fustians, vermillians, and dimities.'

There is abundant evidence to show that in the beginning of the sixteenth century, and probably before that time, cotton was cultivated and converted into clothing in most of the countries occupying the southern shores of the Mediterranean. The European conquerors of Mexico in their first invasion of that country found in use native manufactures of cotton, both unmixed and mixed with the fine hair of rabbits and hares. Some of these fabrics were sent by Cortes to Spain as presents to the Emperor Charles V. Cotton was cultivated and manufactured at an equally early period by different nations on the coast of Guinea, and it is stated by Macpherson in his 'Annals of Commerce,' that cotton cloths were imported into London in 1590 from the Bight of Benin.

It would be difficult to trace the introduction and progress of the cotton manufacture in the different countries of Europe where it is now established. Its growth has in every case been subsequent in point of time, and much inferior as regards its extent, to its progress in this country. Some idea of the relative importance of the manufacture in some foreign European states may be derived from the statement given in our account of the cotton trade of the shipments to those countries of the raw material from the principal country of its production, and to information thus derived we must for the most part restrict our notice of this branch of the subject.

In the notice of ARKWRIGHT (vol. ii., page 344), will be found a sketch of the various inventions and improvements to which the first great extension of our cotton manufacture must be attributed. Previous to the introduction of these inventions this manufacture was of small importance, as is evident from the quantities of the raw material then brought into the country. Arkwright's first patent for the mode of spinning by rollers was taken out in 1769, and the following account of the importations of cotton at different periods preceding and speedily following that event will show how rapid was the progress occasioned by it, and by the other inventions for which it prepared the way.

1697	1,976,359 lbs.	
1701 to 1705 . .	1,170,881 „	average
1710	715,008 „	
1720	1,972,805 „	
1730	1,545,472 „	
1741	1,645,031 „	
1751	2,976,610 „	
1764	3,870,392 „	
1771 to 1775 . .	4,764,589	average
1776 to 1780 . .	6,766,613	
1790	31,447,605 „	
1800	56,010,732 „	

The system under which this manufacture was long carried on was very different from that which is now pursued. It was the custom for the weavers who were dispersed in cottages throughout the district to purchase the material with which they worked, and having converted it into cloths to carry their wares to market and sell them on their own account to the dealers; but about 1760, the merchants of Manchester began to employ the weavers, furnishing them with yarn for warp, and with raw cotton, which was spun by the weaver's family for the weft, and paying a fixed price for the labour bestowed in weaving.

The application of machinery to the preparation and spinning of raw cotton for weft preceded by some years the inventions of Arkwright. In the year 1760, or soon after, a carding engine not very different from that now used was contrived by James Hargreaves, an illiterate weaver, residing near Church in Lancashire; and in 1767 the *spinning-jenny* was invented by the same person. This machine as at first formed contained eight spindles, which were made to revolve by means of bands from a horizontal wheel. Subsequent improvements increased the power of the spinning-jenny to eighty spindles, when the saving of labour which it thus occasioned produced considerable alarm among those persons who had employed the old mode of spinning, and a party of them broke into Hargreaves' house and destroyed his machine. The great advantage of the invention was so apparent, however, that it was soon again brought into use, and nearly superseded the employment of the old spinning-wheel; when a second rising took place of the persons whose labour was thus superseded by it. They went through the country destroying wherever they could find them both carding and spinning machines, by which means the manufacture was for a time driven away from Lancashire to Nottingham.

The cotton-yarn produced both by the common spinning-wheel and spinning-jenny could not be made sufficiently strong to be used as warp, for which purpose linen-yarn was employed. It was not until Arkwright's spinning frame was brought into successful operation that this disadvantage was overcome. [ARKWRIGHT.] Yarn spun with Hargreaves' jenny continued for some time to be used for weft. At first, the manufacturers of cloths composed of cotton only were subject to much annoyance from the determination of the revenue officers to charge them with double the duty paid upon calicoes woven with linen warp and printed for exportation; and also by prohibiting their use at home. With some difficulty an act of parliament was obtained for removing these obstacles to the development of the manufacture, which from that time was prosecuted with a great and continually accelerated rate of increase.

The earliest attempts at producing muslins were made about the year 1780, but without much success, although India-spun yarn was substituted as weft for that produced by the spinning-jenny: the greatest degree of fineness to which yarn spun with Arkwright's frame had then been brought, was eighty hanks to the pound, and even this degree was not attainable by means of the jenny. This disadvantage was overcome by the invention of Mr. Samuel Crompton, which came into general use about the year 1786, and which partaking of the nature of both Hargreaves' and Arkwright's machines, was aptly called the *mule-jenny*. By means of this piece of mechanism, yarns were produced of a much greater fineness than had before been attained. Mr. Crompton's invention was made several years before it could be openly used, because of its interference with the patented invention of Arkwright; but when this patent was annulled, the mule-jenny was brought rapidly and extensively into use, so that in 1787, 500,000 pieces of muslin were made at Bolton, Glasgow, and Paisley, with yarn of British production. The price paid at that time by the manufacturers for these fine yarns was 20 guineas per lb.; but such have been the improvements since made in the machine and the manner of working it, that yarn of the same fineness has of late been sold at from 14 to 16 shillings per lb. Mr. Crompton did not secure to himself the benefit of his invention by taking out a patent; he carried on a spinning and weaving business on a small scale at Bolton, and worked his mule-jenny with his own hands in an attic. In a brief memoir of Crompton, Mr. Kennedy has stated, that about 1802 he, in conjunction with Mr. Lee, set on foot a subscription which amounted to 500*l.*, and with this Crompton was enabled to increase his manufacturing establishment, and to set up several looms for fancy work in Bolton. In 1812 he made a survey of all the cotton manufacturing districts in the kingdom, and ascertained that the number of spindles then at work upon his principle amounted to between four and five millions: since that time the number has been doubled. The kind friends already named assisted him in making an application to parliament for some reward, and the great merit of his invention having been established before a Committee of the House of Commons, he received a grant of 5000*l*., which was paid to him in full without any deduction for fees or charges. This money was employed by Crompton in putting his sons into business, but they proved unsuccessful, and he was reduced to poverty, when Mr. Kennedy again interfered in his behalf, and raised a second subscription, with the produce of which a life annuity of 63*l*. was purchased. He lived only two years to enjoy this small provision. The first mule-jennies consisted of not more than thirty spindles each, but the number has been progressively increased, and they now frequently contain more than 600 spindles each. With one of these machines, a good workman can produce in a week consisting of sixty-nine working hours, thirty-two pounds of yarn of the fineness of 200 hanks to the pound, and as each hank measures 840 yards, the produce of his week's work if extended in a line would measure 3050 miles. This work, extraordinary as it may seem, does not afford a full conception of the degree of tenuity to which cotton is capable of being reduced, one pound of raw cotton having been converted into 350 hanks, forming a continuous thread 167 miles in length. It is said that a few mules have lately been put to work, carrying each 1100 spindles. The greatest recent improvement made in the construction of this machine has been effected by Messrs. Sharp, Roberts, and Co., machinists of Manchester. These machines, which are called self-acting mules, do not require the manual aid of a spinner, the only attendance necessary being that of children, called piecers, who join such threads as may be accidentally broken. Self-acting mules were contrived at different times by Mr. William Strutt of Derby, Mr. Kelly of Lanark, Mr. De Jongh of Warrington, and others; but none of these were brought successfully into use, owing no doubt, in some measure, to the inferior skill of the machine makers as compared with the perfection which they have since attained.

The first successful attempt to weave by means of machinery was made in 1785 by Dr. Cartwright, who secured the invention by patent. In a commercial point of view Dr. Cartwright did not draw any advantage from his power-loom; but in 1809 he obtained from parliament a grant of 10,000*l*. as a reward for his ingenuity. Mr. Monteith, of Pollokshaws, Glasgow, who fitted up 200 power-looms in 1801, was the first person who brought them to profitable use. A great obstacle to their success was presented by the necessity for the frequent stopping of the machine in order to dress the warp. This difficulty was removed in 1804 by the invention of a machine for dressing the whole of the warp before it is placed in the loom, which was made the subject of a patent by Mr. Radcliffe, the inventor. In the use of this machine the warp in its progress to the weaving beam is passed through a dressing of hot starch; it is then compressed between rollers to free it from the superfluous quantity of starch taken up, and is afterwards, in order to dry it, drawn over a succession of ten cylinders heated by passing steam through them; during this last part of the operation the warp is 'lightly brushed as it moves along, and is fanned by rapidly revolving fanners.' The flour used for this dressing operation throughout the cotton factories of this kingdom, amounts in the year to at least 650,000 bushels. The number of power-looms used in cotton factories throughout the kingdom at the end of the year 1835 was stated by the inspectors of factories in a return laid before parliament to be 109,626, which were thus distributed.

England.		Scotland.		Ireland.	
Lancashire	61,176	Lanarkshire	14,069	Waterford	339
Cheshire	22,491	Renfrewshire	1,339	Wexford	67
Derbyshire	2,403	Dumbartonshire	584	Kildare	52
Yorkshire	4,039	Buteshire	94	Dublin	23
Staffordshire	336	Ayrshire	736	Antrim	340
Leicestershire	40	Kirkcudbright	90	Down	425
Middlesex	8	Perthshire	421	Armagh	170
Cumberland	186	Aberdeenshire	248		
Total	90,679	Total	17,531	Total	1,416

England	90,679
Scotland	17,531
Ireland	1,416
Total in the United Kingdom	109,626

Each of these looms, if of good construction and attended by a skilful weaver, is capable of producing 120 yards of cloth per week, or 6240 yards in the year, at which rate the annual productive power of the whole number of looms amounts to 684 millions of yards. It is not probable however that the productive power of these machines is in all cases carried to its utmost extent. Hitherto it has not been practicable to produce any but coarse or heavy goods by means of the power-looom; fine calicoes, muslins, and fancy goods are woven by the hand. The number of hand-loom weavers cannot be ascertained with the same correctness as the number of power-looms, the latter being collected together in factories which are under the superintendence of official inspectors, while hand-loom weaving is altogether a domestic manufacture carried on in the cottages of the artisans. Computations of the number of these domestic looms have been made by different intelligent persons conversant with the trade, who have estimated them variously; the lowest at 200,000 and the highest at 250,000.

The numbers given in the following table refer only to persons engaged in spinning and power-loom weaving, and exclude altogether both hand-loom weavers and persons employed in printing and dyeing, with hosiery, the bobbinnet manufacture, and the production of various small wares made of cotton. [Hosiery, Lace.] Mr. M'Culloch estimates that, 'allowance being made for old and infirm persons, children, &c., dependant upon those actually employed in the various departments of the cotton manufacture, and in the construction, repairs, &c., of the machinery and buildings required to carry it on, the entire cotton manufacture must furnish, on the most moderate computation, subsistence for from 1,200,000 to 1,400,000 persons.'

The following statement of the Number of Cotton Factories in operation in the different parts of the United Kingdom, with the Number and Ages of the Persons employed therein, is abstracted from Returns made by the Inspectors of Factories in 1835.

Counties, &c.	Number of Factories.		Between 8 & 12 Years.		Between 12 & 13 Years.		Between 13 & 18 Years.		Above 18 Years.		Total Number of Persons employed.		
	AtWork.	Empty.	Males.	Fem.	Males.	Fem.	Males.	Fem.	Males.	Fem.	Males.	Females.	Total.
England.													
Chester	109	7	425	406	1,448	1,206	3,672	4,315	9,971	10,069	15,516	15,996	31,512
Cumberland	13	..	8	4	57	38	169	332	392	658	626	1,032	1,658
Derby	92	3	182	192	504	564	1,073	1,924	2,855	3,556	4,614	6,236	10,850
Durham	1	..	. .	. .	. .	2	1	11	8	11	9	24	33
Lancaster	683	32	2,806	1,983	6,419	5,261	16,855	20,365	34,071	34,655	60,151	62,264	122,415
Leicester	6	..	9	. .	66	17	130	92	120	158	325	267	592
Middlesex	7	..	22	. .	24	. .	109	14	62	119	217	133	350
Nottingham	20	..	17	23	82	131	132	382	250	706	481	1,242	1,723
Stafford	13	..	72	78	67	113	201	403	409	705	749	1,299	2,048
York, W. Riding	126	..	489	387	529	533	1,632	2,031	2,537	2,773	5,187	5,724	10,911
Total, England	1,070	42	4,030	3,073	9,196	7,865	23,974	29,869	50,675	53,410	87,875	94,217	182,092
Wales, Flint	5	..	. .	. .	56	33	146	208	250	458	452	699	1,151
Scotland	159	..	454	538	1,258	1,832	2,845	7,597	6,168	12,403	10,529	22,051	32,580
Ireland	28	..	44	58	153	181	286	561	960	1,553	1,639	2,672	4,311
Total, United Kingdom	1,262	42	4,528	3,669	10,663	9,911	27,251	38,235	58,053	67,824	100,495	119,639	220,134

The total value of the cotton goods annually manufactured in Great Britain was stated by Mr. Huskisson to amount, in 1824, to 33,500,000*l*. This estimate was probably excessive at that time, but such has since been the extension of this branch of industry that it is now assuredly below the truth. Mr. M'Culloch, in the second edition of his 'Commercial Dictionary,' published in 1834, estimated the value of every description of cotton goods made in Great Britain in 1833 at 34,000,000*l.* Mr. Kennedy, who is considered a good authority on this subject, supposed the value in 1832, when the quantity of the raw material used was about 12 per cent. less than in 1833, was 24,760,000*l.* Mr. Baines, who has taken great pains to test the accuracy of his calculations in every possible way, has made the value amount, in 1833, to 31,338,693*l.* (*Hist. of Cotton Manufacture*, p. 412). If this calculation was correct for that year, the value in 1835 must, owing to the increased production, have somewhat exceeded 35,000,000*l.*, and according to custom-house returns, including 11 months of 1836, the amount during the year 1836 cannot fall much below 40,000,000*l.* The estimate made by Mr. M'Culloch calculates that the quantity of the raw material used is 240,000,000lbs., and its

value at 7*d.* per lb.	£7,000,000
Wages of 800,000 weavers, spinners, bleachers, &c., at 22*l.* 10*s.* per ann.	18,000,000
Wages of 100,000 engineers, machine-makers, smiths, masons, joiners, &c., at 30*l.* a year each	3,000,000
Profits of the manufacturers, wages of superintendents, sums to purchase the materials of machinery, coals, &c.	6,000,000
	£34,000,000

The quantity of raw material taken for use in 1835 was 333,043,464 lbs.; this, at the average price of 8*d.* per lb., which is certainly below the actual rate, amounted to 11,100,000*l.*, and assuming that through improvements in the processes of manufacture the wages and other expenses were no more than the estimate of Mr. M'Culloch, the value of goods manufactured in 1835 exceeded 38,000,000*l.* In the eleven months of 1836, from 5th January to 5th December, the quantity of cotton taken by the spinners has been 348,343,066 lbs., and although some little check to commercial operations was felt during a few weeks preceding and following the latter date, which may prevent the consumption for the whole year being proportional to that of the eleven months, it may be fairly assumed that the quantity manufactured throughout 1836 will amount to 370,000,000 lbs., which, at the average price of 9¾*d.* per lb., to which raw cotton has advanced through the year, will amount to 15,031,250*l.* There is no reason for believing that any material improvement in the spinning or weaving processes has been introduced within the last year, and on the other hand it is known that the prices of many articles auxiliary to the manufacture have increased, and that a continual accession has been made to the number of hands employed, while the wages of a part at least have been increased. Assuming then that the various items taken into the estimate by Mr. M'Culloch, as amounting to 27,000,000*l.*, would have been correct as applied to the quantity used in 1835, those items upon the increased quantity of 1836 will amount to 30,000,000*l.*, and the whole value of the manufacture will be 45,000,000*l.*

The declared value of cotton manufactured goods exported in 1835 was 16,421,715*l.*, and of yarn 5,706,589*l.* It has been said that no reliance is to be placed upon the value thus declared; but besides the fact that the merchants have no motive for disguising the truth in these declarations, their general accuracy has been tested and proved in various ways by Mr. Baines, and it may afford a further corroboration that the value declared in 1835 amounts in the average to only 6¼*d.* per yard upon the quantity shipped. It has been held that the value of the cotton fabrics retained for use within the kingdom exceeds the value of the part exported by 30 to 40 per cent., but if we content ourselves with estimating the value of the home and the export demand to be equal, the whole value of the manufacture in 1835 exceeded the sum above mentioned of 38,000,000*l.*

The progress of this manufacture is shown by the following table, which contains a statement of the quantity of cotton used by the manufacturers and the value of cotton manufactures exported from 1801 to 1835.

Years.	Quantity of Cotton Wool taken for Consumption.	Value of Goods Exported.	
		Official.	Real, or Declared.
	lbs.	£.	£.
1801	54,203,433	7,050,809	
1802	56,615,120	7,624,505	
1803	52,251,231	7,081,441	
1804	61,364,158	8,746,772	
1805	58,878,163	9,534,465	
1806	57,524,416	10,489,049	
1807	72,748,363	10,309,765	
1808	41,961,115	12,986,096	
1809	88,461,177	19,445,966	
1810	123,701,826	18,951,994	
1811	90,309,668	12,013,149	
1812	61,285,024	16,517,690	
1813	50,966,000	Records destroyed by fire.	
1814	53,777,802	17,655,378	20,033,132
1815	92,525,951	22,289,645	20,620,956
1816	86,815,021	17,564,461	15,577,392
1817	116,757,526	24,259,224	16,012,001
1818	162,122,705	22,589,130	18,767,517
1819	133,116,851	18,282,292	14,699,912
1820	152,829,633	22,531,079	16,516,748
1821	137,401,549	22,541,615	16,093,787
1822	143,428,127	26,911,043	17,218,724
1823	186,311,070	26,544,770	16,326,684
1824	141,038,743	30,155,901	18,452,987
1825	202,546,869	29,495,281	18,359,526
1826	162,889,012	25,194,270	14,093,369
1827	249,804,396	33,182,898	17,637,165
1828	208,987,744	33,467,417	17,244,417
1829	204,097,037	37,269,432	17,535,006
1830	269,616,640	41,050,969	19,428,664
1831	273,249,653	39,357,075	17,257,204
1832	259,412,463	43,786,255	17,398,392
1833	293,682,976	46,337,210	18,486,400
1834	303,602,401	51,069,140	20,513,585
1835	333,043,464	52,333,278	22,128,304

The quantity and declared value of different descriptions of these goods exported in each year from 1820 to 1835 are given in the following table :—

Years.	White or Plain Cottons.		Printed or Dyed Cottons.		Hosiery and Small Wares.	Twist and Yarn.		Total Declared Value.
	Yards.	Declared Value.	Yards.	Declared Value.	Declared Value.	Pounds.	Declared Value.	
		£.		£.	£.		£.	£.
1820	113,682,486	5,451,024	134,688,144	7,742,505	496,580	23,032,325	2,826,639	16,516,748
1821	122,921,692	5,713,722	146,412,002	7,454,243	619,999	21,526,369	2,305,823	16,093,787
1822	151,162,131	6,317,973	150,999,157	7,480,634	722,535	26,595,468	2,697,582	17,218,724
1823	152,184,705	5,884,935	149,631,387	7,095,709	720,014	27,378,986	2,625,946	16,326,604
1824	170,091,384	6,437,817	174,559,749	8,010,432	869,336	33,605,510	3,135,396	18,452,987
1825	158,039,786	6,027,892	178,426,912	8,205,117	919,787	32,641,604	3,206,729	18,359,526
1826	138,159,783	4,477,942	128,897,111	5,388,592	735,497	42,189,661	3,491,338	14,093,369
1827	183,940,186	5,762,876	181,544,618	7,184,459	1,144,552	44,878,774	3,545,578	17,637,165
1828	189,475,956	5,623,802	173,852,475	6,859,447	1,165,763	50,505,751	3,595,405	17,244,417
1829	222,504,344	5,853,625	189,012,152	6,662,623	1,041,885	61,441,251	3,976,874	17,535,006
1830	244,799,032	6,562,397	199,799,466	7,557,373	1,175,153	64,645,342	4,133,741	19,428,664
1831	239,191,261	6,065,478	182,194,032	6,098,035	1,118,672	63,821,440	3,975,019	17,257,204
1832	259,493,096	5,854,924	201,552,407	5,645,706	1,175,003	75,667,150	4,722,759	17,398,392
1833	259,519,864	5,847,840	236,832,232	6,603,220	1,331,317	70,626,161	4,704,024	18,486,401
1834	283,950,158	6,514,173	271,755,651	7,613,179	1,175,219	76,478,468	5,211,015	20,513,586
1835	277,704,525	6,910,506	279,811,176	8,270,925	1,240,284	83,214,198	5,706,589	22,128,304

The course of this great branch of our export trade will be seen in the following statement for the year 1835 :—

An account of the *quantity* and *declared value* of *British cotton manufactured goods exported* from the United Kingdom, distinguishing the description of goods, and the various countries whereto the same were exported in the year 1835.

COUNTRIES TO WHICH EXPORTED.	White or Plain Cottons.		Printed or Dyed Cottons.		Hosiery and Small Wares.	Twist and Yarn.		Total Declared Value.
	Yards.	Declared Value.	Yards.	Declared Value.	Declared Value.	Pounds.	Declared Value.	
		£.		£.	£.		£.	£.
Russia	2,243,650	83,708	639,409	25,590	5,382	21,092,519	1,365,027	1,479,707
Sweden	44,336	1,407	11,705	637	926	840,774	60,751	63,721
Norway	176,330	5,578	514,910	12,338	1,715	104,351	6,234	25,805
Denmark	78,150	1,733	67,999	1,916	159	119,980	6,589	10,397
Prussia	240	20	. .	. .	251	16,753	1,427	1,698
Germany	13,857,147	324,539	29,714,601	866,524	217,968	27,866,013	1,746,893	3,155,924
Holland	10,675,371	263,004	11,071,368	332,588	50,598	13,869,141	1,194,651	1,840,841
Belgium	1,105,465	45,754	2,476,509	90,958	123,537	42,368	7,067	267,316
France	1,045,212	32,885	1,387,281	39,368	106,154	82,533	39,493	217,900
Portugal, Proper	16,832,595	312,169	17,878,068	483,833	20,998	161,438	13,338	830,338
,, Azores	395,293	8,559	546,992	13,254	997	14,955	726	23,536
,, Madeira	212,389	4,704	238,168	5,231	1,174	90	6	11,115
Spain and the Balearic Islands	146,618	3,958	275,435	7,069	1,293	1,820	248	12,568
,, Canaries	239,673	5,989	270,881	7,667	742	200	20	14,418
Gibraltar	8,824,726	196,470	8,378,813	252,670	11,701	26,145	2,466	463,307
Italy and the Italian Islands	21,280,891	527,267	13,401,443	423,691	37,289	7,024,588	427,875	1,416,122
Malta	1,228,532	21,220	591,320	16,695	3,190	306,360	18,883	59,988
Ionian Islands	698,941	14,432	524,393	13,998	962	131,080	8,382	37,774
Turkey and Continental Greece	18,901,025	543,987	12,966,023	426,046	3,344	1,575,400	89,404	1,062,781
Morea and Greek Islands	69,650	3,410	100,541	4,877	439	. .	. .	8,726
Egypt (Ports on the Mediterranean)	3,895,326	106,636	1,430,701	55,143	290	464,120	29,603	191,672
Tripoli, Barbary, and Marocco	1,097,514	22,537	80,300	1,555	125	. .	. .	24,217
Western Coast of Africa	456,939	11,506	3,448,219	113,271	467	1,149	316	125,560
Cape of Good Hope	1,996,866	48,986	2,126,279	64,374	9,357	12,612	780	123,497
St. Helena	53,953	1,535	78,450	3,008	325	. .	. .	4,868
Mauritius	973,900	27,592	1,365,261	42,838	7,092	35	11	77,533
Arabia	77,425	1,953	18,724	504	. .	. .	. .	2,457
East India Company's Territories and Ceylon	39,459,172	996,340	12,318,105	341,983	30,631	5,399,762	432,821	1,801,775
China	8,968,873	212,726	2,248,339	76,596	2,530	2,833,362	170,390	462,242
Sumatra, Java, and other Islands in the Indian Seas	7,017,618	182,558	2,531,265	86,123	3,948	213,935	15,166	287,795
Philippine Islands	1,421,036	36,746	637,881	26,649	450	. .	. .	63,845
New South Wales, Van Diemen's Land, and Swan River	1,233,812	34,313	1,079,297	38,056	11,404	4,820	338	84,111
New Zealand and South Sea Islands	7,759	294	7,360	155	. .	. .	. .	449
British North American Colonies	7,896,245	198,796	8,975,688	251,451	31,899	204,160	11,314	493,460
British West Indies	18,744,807	425,142	22,804,186	568,497	42,022	22,754	2,200	1,037,861
Hayti	2,041,371	58,668	4,446,417	128,395	11,003	. .	. .	198,066
Cuba and other Foreign West Indies	6,800,903	159,268	9,180,426	242,954	19,203	250	30	421,455
United States of America	25,415,034	787,844	49,547,891	1,605,147	327,910	126,888	8,529	2,729,430
Mexico	1,454,701	49,851	4,147,248	154,816	7,881	591,962	39,164	251,712
Guatemala	297,160	5,640	251,000	5,358	. .	12,620	1,610	12,608
Columbia	1,062,368	26,150	1,993,190	49,984	2,212	. .	. .	78,355
Brazil	28,399,127	624,724	30,431,795	813,918	62,066	10,198	981	1,501,689
States of the Rio de la Plata	7,457,260	157,091	5,396,027	155,309	26,488	34,560	2,824	341,712
Chile	9,038,270	194,743	7,776,495	226,132	15,390	2,360	263	436,533
Peru	3,579,087	92,827	6,306,988	190,180	9,873	5,400	380	293,260
Isles of Guernsey, Jersey, Alderney, Man, &c.	809,715	45,233	123,755	3,579	28,899	6,743	389	78,100
Total in 1835	277,704,525	6,910,506	279,811,176	8,270,925	1,240,284	83,214,198	5,706,589	22,128,304

The capital invested in this branch of industry has been estimated by Mr. Kennedy at 30,000,000*l.*, and by Mr. M'Culloch at 34,000,000*l.*, which greater amount is very moderate in the opinion of Mr. Baines. Mr. M'Culloch supposes that a capital of 4,000,000*l.* is engaged in the purchase of the raw material, in which case the same money must be employed nearly at the rate of four separate transactions during the year; capital employed in the payment of wages 10,000,000*l.*, which supposes that the wages have to be advanced 6 months before the goods are produced and sold. The remaining 20,000,000*l.* are supposed to consist of stocks of goods on hand and of capital fixed in spinning and weaving factories, power and hand-looms, workshops, warehouses, and machinery. This latter portion of the capital must have been greatly increased of late; but notwithstanding the great increase in the amount of the manufacture, it is probable that no great addition to the floating capital has been required, the briskness of the trade causing a quicker return, so that the same amount of capital suffices for the transaction of a larger amount of business.

COTTON, SIR ROBERT BRUCE, an eminent English antiquary, descended from an antient family, was the son of Thomas Cotton, Esq., and born at Denton, in Huntingdonshire, January 22, 1570. He was educated at Trinity College, Cambridge, where he took the degree of B.A. in 1585. His taste for antiquarian studies induced him to repair to London, where he became a member of a society of learned men attached to similar pursuits. He soon distinguished himself as a diligent collector of records, charters, and instruments of all kinds relating to the history of his country. The dissolution of monasteries, half a century before, had thrown so many manuscripts of every description into private hands, that Mr. Cotton enjoyed peculiar advantages in forming his collection. In 1600 he accompanied Camden, the historian, to Carlisle, who acknowledges himself not a little obliged to him for the assistance he received from him in carrying on and completing his 'Britannia;' and the same year he wrote 'A Brief Abstract of the question of Precedency between England and Spain.' This was occasioned by Queen Elizabeth desiring the thoughts of the Society of Antiquaries already mentioned upon that point, and is still extant in the Cottonian library. (*Jul.* C. ix. fol. 120.) Upon the accession of King James I. he received the honour of knighthood, and during this reign was not only courted and esteemed by the great, but consulted as an oracle by the privy councillors and ministers of state upon very difficult points relating to the constitution. In 1608 he was appointed one of the commissioners to inquire into the state of the navy, which had been neglected after the death of Queen Elizabeth, and drew up a memorial of their proceedings to be presented to the king, a copy of which is also preserved in the Cottonian library. (MS. *Jul.* F. iii.) In 1609 he wrote 'A Discourse of the lawfulness of Combats to be performed in the presence of the King, or the Constable and Marshall of England,' which was printed in 1651 and in 1672. He drew up also, in the same year, 'An Answer to such Motives as were offered by certain military men to Prince Henry, to incite him to affect Arms more than Peace.' This was composed by order of that prince, and the original manuscript remains in the Cottonian library. (*Cleop.* F. vi. fol. 1.) New projects being contrived to fill the royal treasury, which had been prodigally squandered, none pleased the king, it is said, so much as the creating a new order of knights, called baronets; and Sir Robert Cotton, who had been the principal suggester of this scheme, was, in 1611, chosen to be one, being the thirty-sixth on the list. His principal residence was then at Great Connington, in Huntingdonshire, which he soon exchanged for Hailey St. George, in Cambridgeshire. He was afterwards employed by King James to vindicate the conduct of Mary Queen of Scots, from the supposed misrepresentations of Buchanan and Thuanus. What he drew up on this subject is thought to be interwoven in Camden's 'Annals of Queen Elizabeth,' or else printed at the end of Camden's 'Epistles.' In 1616 the king ordered him to examine whether the Papists, whose numbers then made the nation uneasy, ought by the laws of the land to be put to death, or to be imprisoned. This task he performed with great learning, and produced upon that occasion twenty-four arguments, which were published afterwards, in 1672, among 'Cottoni Posthuma.' It was probably then that he wrote a piece, still preserved in the Royal Library, entitled 'Considerations for the repressing of the Increase of Priests, Jesuits, and Recusants, without drawing of blood.' He was also employed by the House of Commons when the match between Prince Charles and the Infanta of Spain was in agitation, to show, by a short examination of the treaties between England and the House of Austria, the unfaithfulness and insincerity of the latter, and to prove that in all their transactions they aimed at nothing but universal monarchy. Sir Robert Cotton wrote various other works, many of them small pieces in the shape of dissertations, too numerous to be mentioned here; some of them are among his Posthuma, others are printed in Hearne's 'Discourses,' and a few more still remain in manuscript.

As early as 1615, Sir Robert Cotton's intimacy with Carr, earl of Somerset, laid him under suspicion with the court of having some knowledge of the circumstances of Sir Thomas Overbury's death. He was even committed to the custody of an alderman of London; nor, although nothing could be proved against him, was he released from this confinement till the end of five months, during which time he appears to have been interdicted the use of his library. The perfidy of Gondomar, the Spanish ambassador, about the same time, drew upon him another imputation, his name having been, without foundation, inserted in a list suffered to go abroad of persons who had secretly received gratuities from the Spanish ambassador for sinister purposes. From this however his honour was perfectly vindicated.

Being a member of the first parliament of King Charles I., Sir Robert Cotton joined in complaining of the grievances which the nation was said, in 1628, to groan under; but was always for mild remedies, and zealous for the honour and safety of the king. In the next year an occurrence took place, the consequences of which shortened his days. A tract was handed about in manuscript, entitled, 'A Project how a Prince may make himself an absolute Tyrant.' The inquiries that were immediately made for the author of so pernicious a performance led at length to the Cottonian library. Sir Robert, perfectly conscious of his innocence, made strict inquiry into the transaction, and soon found that a copy of this tract, written at Florence, in 1613, by Robert Dudley, duke of Northumberland, under the less exceptionable title of 'Propositions for his Majesty's service to bridle the Impertinency of Parliaments,' had, unknown to him, found its way into his library, and that, equally without his knowledge, his librarian or amanuensis, as was suspected, for a pecuniary consideration, had suffered one or more copies of it to be taken, under the former of these titles. Although Sir Robert Cotton completely vindicated his innocence of having written or disseminated this tract, so destructive to the liberties of the people, yet under the renewed pretence that his library was not of a nature to be exposed to public inspection, it was again put in sequestration, and himself once more excluded from all access to it. He died at his house in Westminster, May 6, 1631. A short time before his death he requested Sir Henry Spelman to signify to the Lord Privy Seal, and the rest of the lords of the council, that their so long detaining of his books from him, without rendering any reason for the same, had been the cause of his mortal malady. From this, as well as other circumstances, it appears that his library was never restored to his possession. He was buried on the south side of the church of Connington, where a suitable monument was erected to his memory.

By his will Sir Robert Cotton directed that his library should not be sold, but should pass entire to his heirs; and it was much augmented by his son, Sir Thomas Cotton, and his grandson, Sir John Cotton. In 1700 an act of parliament passed for the better securing and preserving this library in the name and family of the Cottons, for the benefit of the public; the mansion house, in which the library was contained, to be preserved for the use of the descendants of Sir Robert Cotton, the founder, for ever, and the library to be made publicly accessible; and to be vested after Sir John Cotton's death in trustees. Sir John Cotton died in 1702. Another act of parliament was then framed, which passed in 1706, by which the purchase of the house was effected for the sum of 4500*l*., and that and the library vested thenceforth in the queen, her heirs, and successors for ever: the management of the library being still settled in trustees. Whether it was for the purpose of erecting a new building for the reception of the library on the site of the said house—which indeed was directed by the last mentioned act—or for what other reason, does not at present appear; but we are informed in a subsequent report of a committee of the House of Commons, that the library was in the year 1712 removed to Essex House, in Essex-street, Strand, where it continued to the year 1730, when it was conveyed back to Westminster, and deposited in a house in Little Dean's Yard, purchased by the crown of the earl of Ashburnham. Here, shortly after, on the 23rd October, 1731, a fire broke out, in which 111 manuscripts (many of them of the greatest interest) were lost, burnt, or entirely defaced, and ninety-nine rendered imperfect. It had indeed nearly proved fatal to the whole library. What remained were removed, by permission of the dean and chapter, into a new building designed for the dormitory of Westminster school. In 1753, when the legislature was induced by the will of Sir Hans Sloane to found the British Museum, the Cottonian library was included in the act under which that institution was founded, and was transferred to the British Museum in 1757. The act directed that two trustees, to be nominated in succession by the representatives of the Cotton family, should be for ever added to those appointed by the same act for the general execution of its purposes.

Besides the library of manuscripts, the Cottonian collection contained a considerable number of valuable coins, chiefly Saxon and old English, and several antiquities Roman and English, all of which are now incorporated in the collection of the British Museum.

A catalogue of this library, in a thin folio volume, compiled by Dr. Thomas Smith, was printed at Oxford in 1696; and a more ample one, accompanied by a copious index, compiled by the late Joseph Planta, Esq., was published under the orders and at the expense of the Commissioners upon the Public Records, folio, 1802.

Sir Robert Cotton was liberal in communicating materials out of his collections in his life-time. Speed's 'History of England' is said to owe most of its value and ornaments to it; and Camden acknowledges that he received the coins in the Britannia from his collection. To Knolles, the author of the 'Turkish History,' he communicated authentic letters of the Knights of Rhodes, and the dispatches of Edward Barton, ambassador from queen Elizabeth to the Porte. Sir Walter Raleigh, Lord Bacon, Selden, and Lord Herbert, were all indebted to Sir Robert Cotton's library for materials. Lingard's and Sharon Turner's 'Histories of England,' and numerous other works, are proofs that its treasures continue at this day unexhausted.

CO'TTUS (Linnæus), a genus of fishes of the section Acanthopterygii and family Loricati* (Jenyns). Technical characters:—head large, depressed, furnished more or less with spines or tubercles; teeth in front of the vomer and in both jaws, none on the palatines, two dorsal fins; ventral fin small; body without scales; branchiostegous rays six.

The *Bull-head* or *Miller's thumb* (*Cottus gobio*, Linn.) affords an example of this genus. This little fish, which is found in almost all the fresh-water streams throughout Europe, is from three to four inches in length, and of a brownish colour above, more or less mottled and spotted, and whitish beneath. The head is very large in proportion to the body, and without spines; the preoperculum has a single curved spine on the posterior part; the eyes are small, and directed upwards. The number of fin-rays are—anterior dorsal 6 to 9, posterior 17 or 18; pectoral 15; ventral 3; anal 13; caudal 11. The bull-head more particularly frequents those streams in which pebbles abound, and feeds upon aquatic insects, &c.

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* We adopt the term Loricati, which is synonymous with the family of the Acanthopterygii, termed by Cuvier "celle des Joues Cuirassees."

The remaining British species of this genus inhabit the salt water, and together with others of the same habits, are distinguished from the fresh-water species by having the head armed with numerous spines.

The *Sea-scorpion* or *Short-spined Cottus* (*Cottus scorpius*, Bloch.) is very common on our coasts, and is found very frequently under stones or sea-weeds, in the little pools left by the retiring tide. It is thus described by Mr. Yarrell. 'The head large, more elevated than that of the river bull-head; upper jaw rather the longer; teeth small and sharp; eyes large, situated about half-way between the point of the nose and the occiput; irides yellow, pupils blueish black; one pair of spines above the nostrils, with an elevated ridge between them; the inner edges of the orbits elevated with a hollow depression above, but no occipital spines; preoperculum with three spines, the upper one the longest; operculum with two spines, the upper one also the longest, the lower one pointing downwards; there is besides a scapular and a clavicular spine on each side; gill-openings large; the body tapers off rapidly, and is mottled over with dark purple brown, occasionally varied with a rich red brown; the belly white; the first dorsal fin slightly connected with the second by an extension of the membrane; lateral line smooth; the ventral fins attached posteriorly by a membrane to the belly.' Length rarely exceeding eight or nine inches.

This fish feeds upon small crustacea and the fry of other fishes.

The *Father-lasher* or *Long-spined Cottus* (*Cottus bubalis*, Euphrasen), is about the same size and resembles the last both in appearance and habits; the two species, however, are seldom found in the same immediate neighbourhood. This species is distinguished from the last by its more perfectly armed head, the spines of which are longer in proportion, the space between the eyes is less, the crest above the eyes is more elevated, and the ventral fins are destitute of the connecting membrane observed in the short-spined cottus. There are several other points of distinction which will be found in detail in Yarrell's 'History of British Fishes.' *The four-horned Cottus* (*Cottus quadricornis*, Linn.) another species also found off the British coast, though less abundantly than either of the foregoing maritime species, may be distinguished, as its name implies, by the four tubercles which are situated on the top of the head, two on the nape, and two near the eyes; the preoperculum is furnished with three spines, and the operculum with one; length from ten to twelve inches.

Aspidophorus (Lacépède) being considered by Cuvier as a subgenus of Cottus, it may be well to notice it under this head. This genus, or subgenus, is thus characterized: —head large and depressed, more or less armed with spines and tubercles; both jaws furnished with teeth, none on the vomer; body attenuated posteriorly, covered with angular plates; ventrals small; branchiostegous rays six.

Several species of this genus are known, one of which is found not uncommonly on our own coasts, and is known by the name of the *Armed Bull-head* (*Aspidophorus Europæus*, Cuvier). This little fish, generally about four or five inches in length, is frequently caught in the shrimping nets, and is called by the fishermen, in some districts, *the Hook-nose.* Its general covering is brown above and white beneath: there are however most commonly indications, more or less distinct, of several broad dark marks across the back; the nose is furnished with four recurved spines, the upper jaw extends beyond the lower; the infra orbitals have three blunt tubercles on their lower margin, and a sharp spine directed backwards; the preoperculum is also armed with a spine; the branchiostegous membrane and chin are each furnished with numerous fleshy filaments; the body is divided longitudinally by eight scaly ridges, those on the upper part being most produced.

The number of fin rays are: dorsal 5 to 7; pectoral 15; ventral 3; anal 7; caudal 11.

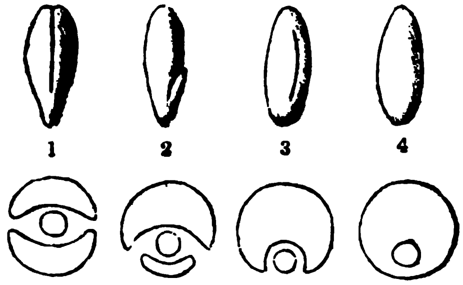
The habits of this fish appear in many respects to be the same as those of the Cottus scorpius, &c.

COTURNIX. [Quail.]

COTYLE'DON is the leaf of a seed; it is the part prepared by nature to enable the young plant, when it first springs into existence, and before it has been able to form organs of digestion and respiration, to perform both those functions. This usually takes place as follows: in its original state the cotyledon contains carbon in excess; as soon as vegetation commences, oxygen is absorbed, and carbonic acid is formed, with which the cotyledon freely parts, thus reducing the proportion of its carbon to that which is most conducive to the subsequent health of the individual. Connected with this is the development of saccharine matter which enters into the circulation of the young plant, and imparts vigour to all its nascent powers. Sometimes the cotyledon performs those functions under-ground during the whole period of its activity; but in many cases its subterranean life extends only to a few days or hours, after which it is elevated above the soil, and takes on the ordinary property of the leaves, decomposing carbonic acid and parting with oxygen. The latter case is commonly that of cotyledons containing but a small proportion of fæcula; the former is usually that of cotyledons in which amylaceous matter is copiously present, as in the common pea, the acorn, &c.

The situation of the cotyledon is on one side of the axis, of which the plumule is the apex, and the radicle the base. In the largest number of known seeds there are two cotyledons on opposite sides, on the same plane; in a few there are several opposite to each other in a whorl; in a considerable number there is only one; and among the lower plants there appears universally to be an absence of the organ. These differences have given rise to the terms Dicotyledons, Polycotyledons, Monocotyledons, and Acotyledons.

The first two and the last of these forms will be readily understood; but the structure of a Monocotyledon is far more puzzling to the student, in consequence of the axis not being found on one side of the cotyledon, as would have been expected. A common monocotyledonous embryo is a nearly cylindrical body, obtuse at each end, as at *fig.* 4, and its axis of growth is in the interior of the cotyledon, so that it can only be found by cutting the organ open. The following diagram will explain this anomaly. Let the upper line represent four kinds of embryos seen from the side, and the lower line the plan upon which those embryos are constructed, the inner circle being always the axis of growth, and the crescent or crescents the cotyledons. No. 1 is a common dicotyledonous embryo, with its cotyledons equal; No. 2 is a rare kind of embryo of the same kind, with one of the cotyledons exceedingly small. If the smaller cotyledon were absolutely deficient, it may easily be conceived that such an embryo as that at *fig.* 3 would be the result, the angles of the crescent being drawn together round the axis, just as the edges of leaves are drawn together when they roll up in the leaf-bud. If we now suppose that the angles are not only drawn together, but actually united as at *fig.* 4, the presence of the axis within the cotyledon will no longer appear inexplicable.



COUA. [Cuculidæ.]

COUCH GRASS (*Triticum repens*) is a common and most troublesome weed which infests arable land, especially that which is of a light and mellow nature. It is perennial, and propagated both by seed and by extension of the root, which is long and jointed; each joint produces a fresh shoot, which, in a favourable situation, soon becomes a new parent plant, creeping along under the surface of the ground, and spreading over a whole field with great rapidity. It appears above ground like a blade of grass, or young wheat, which, in its tender state, is readily eaten by sheep. A seed stem afterwards shoots up, bearing a spike, composed of a middle rachis and alternate flosculés on each side. Each of these produces three or four seeds, protected by a long pointed chaff. Many of the seeds never come to perfection owing to the increase of the roots, but in stiff ground and permanent pastures the roots are prevented from spreading, and then the seeds ripen. The principal propagation of the plant is by the root. The destruction and extirpation of couch grass is one of the first things which an experienced farmer sets himself to on taking occupation of land which has been neglected by the preceding tenant.

There is no law in this country which obliges a tenant to keep his lands free from weeds. There is something of the kind in Belgium with respect to thistles and weeds which propagate by seed. An agricultural code is necessary to protect the landlord, and to prevent the woeful waste of labour produced by carelessness and bad management; and until such a code is established, agriculture will never make rapid progress.

To extirpate couch grass a dry time must be chosen in summer; the land must be ploughed with a deep furrow to bring the roots to the surface: when the land is dry, it must be rolled to break the clods, and all the roots which lie near the surface must be gathered by the harrows or the couch rake. Sometimes the roots are matted into tufts, which can only be got up by means of a fork or prong. In this case no manual labour should be spared, especial care being taken not to break the roots, but to get them out whole, with all their offsets, if possible. After this, Finlayson's harrows, described in vol. ii., page 226, may be used on light lands; or an instrument of a similar nature, called, from the shape of the tines, a *cat's claw*, and in Scotland a *grubber*, which will bring up all the roots that are within nine or ten inches of the surface. When all the couch has been apparently eradicated, there will still remain a sufficient number of pieces and joints, broken off by the instruments and left in the ground, to produce a fresh crop of couch grass, especially if the land is frequently stirred, and showers intervene. Hence the vulgar notion that some lands breed couch, and that it is useless labour to be at much expense to eradicate it. Such lands should be laid down with artificial grasses and kept in grass for several years, being depastured with sheep and cattle in preference to mowing them for hay.

In this case the couch grass will spring up above ground and gradually disappear, and when the land is broken up again not a vestige of it will remain. After this it may be kept clean for many years by hoeing and weeding.

In very stiff soils, as in Kent, the couch grass is got rid of by ploughing very deep and burying it eight or nine inches under the surface. For this purpose the furrow slice must be large, and turned completely over, not merely set on end as is often the case. The old turn-wrist plough, drawn by four horses, does this most completely, and this is the principal reason why many practical farmers in that county prefer this ponderous and clumsy instrument to lighter and more scientific ploughs. In very heavy land couch grass is easily kept down if an opportunity be taken to plough it to the surface in dry weather. The stiff clods in which the roots are entangled contract in drying, and in contracting destroy the texture of the root; when they crumble after a shower the couch may be collected by hand and burnt or carried away. If the method of ploughing it in is preferred, it should be done by trench ploughing, by means of two ploughs following each other in the same furrow. The first may go six or seven inches deep, and the second four or five; thus the couch grass will be buried much deeper than with one ploughing, and four horses with two men will do the work well, which will not be much more expensive than the turn-wrist plough, with four horses, a man, and a boy. This can only be done to advantage in deep soils, such as occur in a few counties only.

When a quantity of the roots of couch grass has been collected, they are usually burnt in heaps on the ground: the ashes serve to enrich the land in some degree, but a much more profitable use may be made of them. When they are cleaned from the earth which adheres to them, they are found to be nutritious and farinaceous. Pigs eat them greedily; horses and cows will also eat them, especially when boiled or steamed; and weight for weight they contain not much less nutritious matter than potatoes; it is downright waste therefore to burn them. By maceration and washing, a good fecula is obtained, which, with hot water, forms a jelly-like arrowroot. The decoction of the root has been recommended as a cooling and demulcent beverage, and not without apparent reason; but if it be not thought worth while to wash and steam the couch for food, it is still more profitable to decompose it by means of lime than to burn it. For this purpose it should be gathered into a large heap and watered to induce fermentation. When it has heated, it should be turned over and mixed with quick lime in a considerable proportion; after two or three turnings with the spade, with an interval of a few weeks, it will be found converted into rich mould, which may then be spread over the land, either as a top-dressing for clover and artificial grasses, or ploughed in with the seed, where this method is practised.

To keep the land free from couch grass occasional summer tillage is necessary, which may be given when turnips are sown, or after an early crop, such as tares cut green, Trefolium incarnatum, or winter barley, without losing a crop. In a well-managed farm couch grass should no more appear than docks or thistles. In Belgium a slovenly farmer is called a couch grass farmer.

Dogs eat the blade of couch grass from instinct to purge and vomit, and hence it has been named, in French, *chiendent* or *dog's tooth;* but the shape of the young shoots from the root may also probably have led to that name, for they have a great resemblance to a canine tooth.

It has been doubted whether, in some situations, couch grass might not be cultivated to advantage for its roots: no experiments however have been made in cultivating this prolific plant, as far as we know; but it is not unworthy the attention of those who take a pleasure in increasing the resources of agriculture. In years of great scarcity the root of couch grass has been used, in northern countries, mixed with flour, in making bread. It contains nothing unwholesome, and has a considerable resemblance in taste to the potato. The water in which the root of couch grass has been boiled may be used in the manufacture of bread; it would probably add considerably to the weight of the loaf when baked, but may perhaps communicate an unpleasant taste to it.

COUCHING. [CATARACT.]

COUGH, a violent expulsion of air from the lungs, attended, when the act of coughing recurs in rapid succession, that is, when there is a fit of coughing, with correspondingly rapid inspirations. Cough is a violent and sonorous expiration, during the effort of which a much greater quantity of air is expelled from the lungs than is returned by the corresponding act of inspiration.

The mouth, nose, fauces, pharynx, larynx, trachea, and bronchi, are lined by a highly irritable and exquisitely sensible membrane. That portion of this membrane which lines the air passages, properly so called, namely the larynx, trachea, and bronchi, possesses the properties of irritability and sensibility in so great a degree, that it cannot endure without the most violent excitement the slightest contact of a foreign body. It is necessary to the due performance of the function of the lung, one of the most important of the organic circle, that the tubes which lead to it should always be perfectly unobstructed; should invariably present to the air a free and uninterrupted passage. Among the expedients adopted to secure this purpose, one of the most important consists in the disposal and action of the membrane which lines the internal surface of the air-tubes. This membrane abounds with blood-vessels and nerves, by the action of which a large quantity of water is constantly separated from the blood, by which the tubes are kept in a state of perfect suppleness and moisture. A layer of the thick, tenacious, and viscid substance, called mucus, also separated from the blood by this membrane, is spread over its entire surface, by which it is defended from the irritating properties of the air, with which it must always be in contact. Moreover, the heat generated by the process of secretion [SECRETION] warms the air in its passage to the lungs; and so great is the degree of heat communicated to the air during its progress, that before it reaches the lung it is brought to the same temperature as that of the blood. Accordingly when the lining membrane of the air passages is sound, when the temperature of the air ranges within a certain limit, and when the air is pure, holding in solution or suspension no foreign and noxious body, the external cold exciting air passes deep into the interior of the body, into the very centre of the chest, not only without occasioning irritation, but even without producing sufficient sensation to induce consciousness. But when either of these conditions is changed, the state natural to the respiratory process is disturbed; irritation is excited; warning is given that some danger threatens the system; and an effort is made to remove the offending cause. The warning is announced, and an effort is made to remove the danger, by the act of coughing.

When the lining membrane of the air-tubes is exposed to any irritating cause, suppose, for example, to intensely cold currents of air, the first effect of this irritation is to occasion a sudden rush of blood to its capillary vessels. These vessels, with which every point of the membrane is thickly crowded, become preternaturally distended with blood. By this distension the membrane becomes thick and swollen, and this thickening and tumefaction may go on to such an extent as materially to narrow the calibre of the tubes, and of course proportionally to obstruct the passage of the air to the lungs. Hence the simple dilatation of the arterial capillaries of the air-tubes with blood, and still more the like dilatation of the venous capillaries, a state which constitutes the disease termed congestion [Congestion], may produce a high degree of irritation. This irritation induces the act of coughing, and the cough relieves the congestion in the following mode.

It may be shown that with every act of expiration a current of blood, that blood which has been acted upon by the air and converted from venous into arterial, issues from the lung, and is carried out to the system; that inspiration is the action during which venous blood flows to the lung; and expiration the action during which arterial blood flows from the lung: consequently, in any state of the system, transient or permanent, in which the inspirations preponderate over the expirations, the blood of the system partakes of a venous character; and on the contrary, when the expirations preponderate over the inspirations, the blood becomes of an arterial character. Cough, it has been stated, is a forcible expiration, during the effort of which a greater quantity of air is expelled from the lung than is returned by the corresponding act of inspiration; but during the same action a proportionate quantity of arterial blood is sent out to the system. Now the stimulating properties of this blood (for arterial blood is the proper stimulus of the capillary arteries of the system) excite those capillaries which, from any cause, have been thrown into a state of congestion, to increased action; and by this increased action the load of blood with which they were distended is forced onwards, and the exonerated vessels are restored to their natural state. In this manner the mere act of coughing oftentimes relieves a congested state of many organs of the system, and of the air passages and lungs in particular.

But whatever cause induces a sufficient degree of irritation in the lining membrane of the air passages to distend its capillaries with blood, is apt to increase the activity of its secretion. In the natural and healthy state of the membrane, the action between its secreting and absorbing vessels is so balanced, that only a certain quantity of mucus is allowed to remain in contact with the membrane; no more than is just sufficient to defend it from the irritating agent to which it is exposed. But under the influence of any unusual irritating agent, more mucus is poured out upon the surface of the membrane in a given time than the absorbents can remove, in consequence of which the mucus accumulates, and in the exact proportion to such accumulation must necessarily be the obstruction to the free passage of the air to the lungs. Further, whatever increases the quantity has also a tendency to change the quality of the secretion, rendering the mucus thin and acrid, or thick and sticky, and thus converting it from a bland and defending fluid, into a highly irritating substance. In order to remove this irritating substance cough is excited; that is, a column of air is violently expelled from the lung, and directed through all the air-tubes, carrying away by the force of the current whatever it meets with in its course. The creation of this current is the necessary effect of the action of coughing, and the removal of some irritation or obstruction is its ultimate object. Disagreeable, then, as a cough always is, it is a salutary action, not only conducive to the safety of the system, but often indispensable to the preservation of life. Death is sometimes the actual and the immediate consequence of its absence, or of its want of violence.

Cough is not a cause, but an effect; not a disease, but a symptom of disease. Without doubt there are states of the system in which it re-acts upon the malady of which it is the consequence, and greatly increases its severity and danger: it constantly requires regulation and control; but even if it were in the power of any remedies completely and suddenly to stop it, the result of their application would often be fatal.

Considered in relation to its causes, and as a sign of internal disease, cough presents a subject of inquiry of great practical interest and importance. While it is readily excited by trifling and transient causes of irritation, it is the invariable attendant of some of the most frequent and fatal diseases to which the human body is subject. It is also sometimes among the very first symptoms produced by those diseases; hence the early discrimination of its true character may give invaluable information of the danger which threatens, and lead to the adoption of preventive means, at the only time when such measures can be of the least avail.

From what has been stated, it is plain that cough may be induced by disease, or by any irritating cause affecting either the air-passages or the lungs. It is most frequently induced by irritation of the mucous membrane of the air-passages, and more especially by congestion or inflammation of this membrane, in any degree, and in any part of its course. There are few diseases of the lungs of which it is not an attendant: such as inflammation of their investing membrane, the pleura; inflammation of the cellular tissue which enters into their structure; effusion into their substance, &c. But the most important malady with which it is related is the deposition and action of that tubercular substance which lays the foundation of consumption. [Phthisis.]

But though the most frequent and important diseases of which cough is an early and obvious sign, are maladies which have their seat in the air-passages or in the lungs, yet it is very frequently excited by diseases of distant organs, which have only a remote and indirect relation with the respiratory functions. Thus it is sometimes produced by diseases of the stomach, but far more often by diseases of the liver; by the suppression of the secretion of bile, or by the secretion of bile of bad quality; by the over-distension of the gall-bladder with bile; by the irritation of worms in any part of the alimentary canal; by a disordered state of the organic nerves supplying the viscera which assist the stomach in carrying on the great process of nutrition; and by nervous irritation produced in any part of the body, as in dentition and some affections of the spinal cord. It is also readily induced, and is sometimes of very long continuance, in the nervous temperament, affecting especially hysterical and other irritable persons; and by the repulsion of cutaneous eruptions and the suppression of discharges to which the system has been long accustomed. When it is the result of hepatic disorder, the indications of disease of the liver may be so slight as to escape notice, unless the malady be carefully sought for; yet the cough all the time may be extremely violent, often presenting a spasmodic character, and very obstinate. The observant practitioner will detect its connexion with the liver partly by that very spasmodic character, and still more by the accompanying sense of fullness about the epigastric region, the loaded tongue, the loss of appetite, the constipated bowels, and other signs of indigestion. A short, dry, irritating, and very obstinate cough is often remotely connected with a disordered state of the digestive organs, immediately indicated by a relaxation and enlargement of the uvula, the elongated uvula producing considerable irritation about the root of the tongue and the epiglottis. In other cases, when the uvula is not particularly affected, the same troublesome cough equally accompanies a disordered condition of the soft palate and of the fauces. Local stimulants and other remedies may be applied to these parts without end and without avail; but their unhealthy condition, and the cough which accompanies it, completely disappear the moment the stomach, the liver, and the bowels are restored to a sound state.

The treatment of cough must of course be modified in every different case according to the causes on which it depends. If it be induced by cold congesting the air-passages, the remedies of catarrh [Catarrh] constitute the appropriate means of cure; if by inflammation of the lining membrane of the air-tubes, the remedies and the principles of their administration have been already described under Bronchitis. If it depend on diseases of the lung, the precise nature of the malady should be carefully and anxiously investigated; and the removal of the cough attempted only by the removal or prevention of the threatening or the actually existing disease. In like manner, if cough be induced by nervous irritation, by undue excitement in a nervous temperament, or by a disordered state of the stomach, liver, or bowels, it is absurd to attempt the removal of the cough in any other mode than by the cure of the disease of which it is the sign, and to the discrimination of which it should be the guide.

COUGUAR. [Felis.]

COUI. [Testudinata.]

COUIA. [Coypou.]

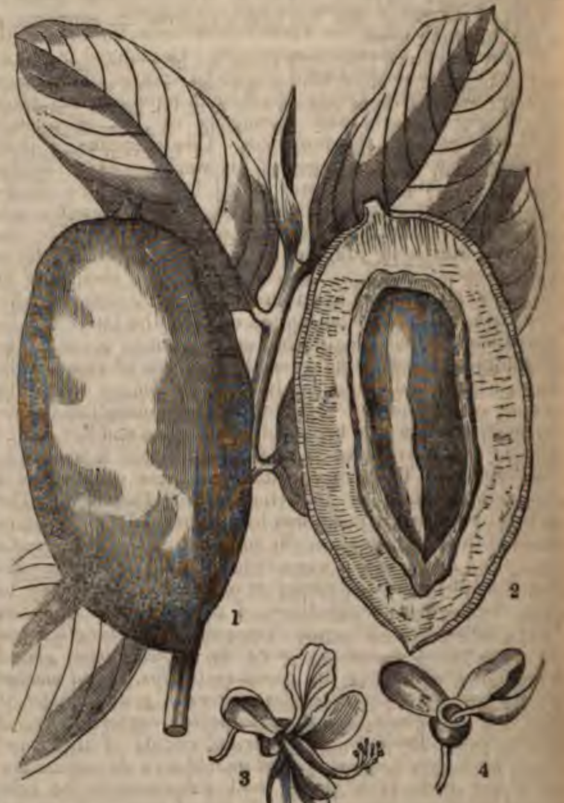
COULOMB, CHARLES AUGUSTIN DE, was born at Augoulême in 1736, studied at Paris, and entered at an early age into the army. After serving with distinction for three years in the West Indies, he returned to Paris, where he became known by a treatise on the equilibrium of vaults (1776). In 1779 he was employed at Rochefort, where he wrote his 'Théorie des Machines Simples,' a treatise on the effects of friction and resistances, which gained the prize of the academy, and was subsequently printed separately in 1809. A project of navigable canals had been offered to the *Etats* of Bretagne, and Coulomb was appointed by the minister of marine to examine the ground. His report was unfavourable, which so displeased some influential persons that he was placed in confinement: the pretext was, that he had no order from the minister of war.

The *Etats* afterwards saw their error, and offered Coulomb a large recompense, but he would accept nothing but a seconds' watch, which afterward served him in all his experiments. In 1784 he was *intendant des eaux et fontaines;* in 1786 he obtained the reversion of the place of *conservateur des plans et reliefs,* and was sent to England as a commissioner to obtain information on the hospitals. At the revolution he lost his public employments, and devoted himself to his domestic affairs. He was one of the first members of the Institute, and an inspector-general of public instruction. He died August 3, 1806, having supported a high moral and social character through life.

There are many men into whose biographies we are obliged to insert more account of their labours than will be necessary in the case of Coulomb. All his researches are of such permanent character, that it would be repetition to describe them in a work which must treat separately of mechanics and electricity. We have no prominent acts of mind to record which individualize his discoveries, though they were marked by a union of patient industry and experimental sagacity of no common order, accompanied by a strong sense of the necessity of mathematical experiment, or numerical determination of mechanical phenomena. He was, we may say, the founder of the school of experimental physics in France, a country which, till his time, had been by no means pre-eminent in that branch of discovery. His researches on friction, and resistances in general, were the first in which the subject had been pursued manually by one with the knowledge of mathematics necessary to combine or separate the results according to the subject and the method. In electricity he was the first who invented the method of measuring the quantity of action, and from it he deduced the fact of electrical attractions and repulsions, following the Newtonian law. He ascertained the non-penetration of these agents into the interior of solid bodies, and on these two conclusions the mathematical theory of electricity is now based. He even deduced the second phenomenon from the first. He extended in a great degree to magnetism his conclusions on electricity. The instrument by which these brilliant results were obtained was of his own invention, the Torsion Balance, the principle of which is a needle hanging from a flexible thread, in which the force of *torsion* necessary to produce a given effect in producing oscillations of the needle being first ascertained, the instrument remains a determinate measurer of any small forces; or, if the absolute force of torsion be unknown, it may be made to give comparative determinations. This construction, in the hands of Cavendish [Attraction], determined the mean density of the earth, and is now as much of primary use in delicate measurements of force, as the common balance in analytical chemistry. There is, perhaps, no one to whom either the determination of resistances in mechanics, or the theory of electricity, are so much indebted as to Coulomb. The account of his life is from the article in the 'Biog. Univ.,' by M. Biot. See also Electricity, Friction, &c.

COUMAROUNA ODORA'TA, also called **DI'PTERIX ODORATA,** is the plant which yields the sweet-scented Tonga bean of the perfumers. It is a native of French Guiana, where it forms a large forest tree, called by the natives Coumarou; the trunk is said to be 60 or 80 feet high, with a diameter of three feet and a half, and to bear a large head of tortuous stout limbs and branches. The leaves are pinnated, of two or three pair of leaflets, without an odd one at the extremity. The flowers appear in axillary branches, and consist of a calyx with two spreading sepals, and five purple petals washed with violet, of which the three upper are the largest and most veiny. The stamens are eight, and monadelphous. The fruit is an oblong hard dry fibrous drupe, containing a single seed; the odour of its kernel is extremely agreeable. The natives string the seeds into necklaces; and the Creoles place them among their linen, both for the sake of their scent and to keep away insects.

The genus belongs to the tribe Cæsalpinia, of the natural order Fabaceæ, or Leguminosæ.



[Coumarouna odorata.]

1. A ripe drupe. 2. The same cut open. 3. A complete flower. 4. The calyx with a young drupe projecting from it.

COUNCILLORS. [Boroughs of England and Wales, p. 210.]

COUNSEL, an abbreviation of counsellor. In England a counsellor is a barrister [Barrister], or one who has kept twelve terms at one of the four inns of court, and obtained a certificate under the 9 Geo. IV. c. 49. The word has no plural number, and is used to denote either one or more counsel. The duty of counsel is to give advice in questions of law, and to manage causes for clients. They are styled common law, equity, or chamber counsel, according to the nature of the business they transact. They are supposed to plead gratuitously. [Advocate.] In the words of Mr. Justice Bayley, 1 Chit. R. 351,—'they are to be paid beforehand, because they are not to be left to the chance whether they shall ultimately get their fees or not, and it is for the purpose of promoting the honour and integrity of the bar that it is expected all their fees should be paid when their briefs are delivered. That is the reason why they are not permitted to maintain an action for their fees.' Counsel may be retained generally, that is, to advocate any cause in which the retaining party may be engaged, or specially with reference to a pending cause; and generally speaking, it is not optional for counsel to refuse a retainer; there are certain rules however by which their practice is regulated.

Counsel in a cause have the privilege of enforcing anything which is contained in their instructions and is pertinent to the matter in question, and are not bound to inquire whether it be true or false: they are also at liberty to make fair comments on the evidence adduced.

Formerly, in cases of felony, counsel for the prisoner were not allowed to address the jury on his behalf; they might however examine and cross-examine the witnesses, and argue points of law; but now by stat. 6 & 7 Wm. IV. c. 114, all persons tried for felony may make full answer and defence by counsel.

Counsel are punishable by stat. West. 1. 3 Ed. I., c. 28, for deceit or collusion, and are so far under the jurisdiction of the judges, that in the event of malpractice they may be prohibited from addressing the court; there are also certain rules established by each court for the regulation of its own practice, to which counsel are subject.

COUNT, through the French word *comte*, from the Latin *comes, comitis*, meaning companion. Considered in its original acceptation, this word might be translated by assessor, an officer who, during the Roman republic, was given as an assistant to the proconsuls or the proprætors sent out to govern the provinces. Cicero speaks of these comites in several passages of his works. Dion Cassius states that Augustus Cæsar called by that name all the officers of his imperial household. These comites pronounced judgment on all matters referred to them by the emperor, and their judgments had the same authority as the *Senatus Consulta*. The council of state instituted by Napoleon gives a very exact idea of the constitution of that court tribunal. Like the council of state, the latter was invested with judicial, legislative, and executive power. The emperors of the East followed the example of those of the West, with this difference only, that the comites created by Augustus and his successors were the counsellors of the emperor, and the title belonged to the office and not to the person; whilst at the court of Constantinople it was quite the contrary. The nomenclature of these counts fills a considerable place in the Glossary of Ducange. The monarchies of modern Europe have inherited the tributary spoils of the lower empire. By substituting the word *grand* for that of *count*, which was a title common to all the officers or ministers of the emperors of the East, it is easy to show the analogy of the titles of modern court dignities to the antient. Thus, the *comes sacrarum largitionum* has been called *grand almoner*; the *comes curiæ*, *grand master of ceremonies*; the *comes vestiarius*, *grand master of the wardrobe*; the *comes domesticorum*, *grand master of the royal household*; the *comes equorum regiorum*, *grand equery*, &c. The *comes marcarum*, counts of the frontiers, which were formerly called *marches* (a denomination still in use in the papal states), took subsequently the title of *marquis*; an innovation which raised long and serious discussions among the learned in feudal right and court etiquette.

Under the first two races of the Frank kings, the counts were, as under the lower empire, officers of various degrees. The count of the palace was the first dignity in the state, after the *maire* of the palace. He presided in the court royal when the prince was absent, and possessed sovereign jurisdiction. He also exercised a great influence in the nomination of the king's delegates, who, under the title of counts, administered the provinces. A count had the government of a small district, often limited to a town and its dependencies. He was at the same time a judge, a civil administrator, and a military commander. In case of war, he led in person the contingent of his county to the army. The learned Dutillet, in his 'Recueil des Rois de France, de leur Couronne et Maison,' &c., expatiates on the functions of antient counts. With the progress of time, the counts, as well as the other officers appointed to govern the provinces, the towns, and the frontiers, succeeded in rendering their places hereditary, and in making themselves sovereign masters of the districts of which they had only been created removable and revocable administrators. At first they contented themselves with securing the reversion to their sons, then to their collateral heirs, and finally they declared those places hereditary for ever, under Hugh Capet, the son of Robert, count of Paris, who himself only obtained the throne partly in consequence of that concession. It was feudalism that introduced inheritance instead of election as a permanent rule in political successions. The supreme chief of the antient Franks, *koning* (Lat. *rex*), was a magistrate, and as a magistrate he was elected, although always from the same family. The inferior chiefs, *heri-zoghe, graven, rakhen-burghe*[*] (Lat. *duces, comites, judices*), were also elected. But when the feudal system attained its perfection, when men were no longer ruled by men, but lands by lands, and men by lands or by the legitimate heir of the lands, then no kind of election remained. One demesne made a king, as another made a duke, a count, a viscount, &c.; and thus the son of a count became a count, the son of a duke became duke, and the son of a king became king. Finally, to form a just idea of the formidable power of the feudal counts, we must refer to the period of the erection of the towns of the northern provinces of France into commonalties or republics, when their heroic population had to sustain a most deadly struggle, from the eleventh century to the middle of the fourteenth, before they could shake off the iron yoke of the counts and the bishops[†]. The term 'count' is now become in France a mere title, conferring no political importance. In the papal states, as well as in those of Austria, it may be bought with sums of money not at all considerable; and in the other monarchical states of the continent, it is granted as a mark of imperial or royal favour.

The title of *earl*, or, as it was often rendered in Latin, *comes*, companion, is of very high antiquity in England, being well known to the Saxons under the name of *ealdorman*, that is to say, *elder-man*, and also *shireman*, because each of them had the government of a distinct *shire*, or, as it is now generally called, *county*. The sheriff, under his latinized name, is called vice-comes, or viscount, which term [VISCOUNT] is now one of the titles of rank in the British peerage. The term count seems not to have been used in England as a title of honour, though the wives of earls from a very early period have been addressed by the title of countess. The king, in mentioning an earl in any writ or commission, usually styles him 'trusty and well-beloved cousin,' a peculiarity at least as antient as the reign of Edward III.

COUNTER-APPROACH, a trench leading from the covered way of a besieged fortress, at some point on either flank of the ground upon which the works of the besiegers are formed, and extending to any convenient distance towards the country: it is frequently terminated by a small redoubt or battery, from whence a fire of light artillery is directed into the trenches of the enemy. These trenches being always, if possible, disposed so that they cannot be enfiladed by the guns of the fortress, a counter-approach becomes necessary in order that the garrison may be enabled to silence the fire from them, or to impede the communications along them.

If counter-approaches are intended for more than a momentary purpose, the parapets of the redoubts should be strong enough to resist the fire of artillery, and those works should be secured against an attack at their gorges by lines of palisades

COUNTER-FORTS, in military architecture, are buttresses of brick or stone built against the revetment walls by which the outward pressure of the rampart, or of the natural ground on the opposite side of the ditch, is resisted. The rectangular portions at N and M *fig.* 2, BASTION, are counter-forts so situated. They are intended to increase the strength of such walls, and are formed between them and the earth which the walls retain. Their depth is usually equal to the mean thickness of the revetment, and they are placed at intervals of about 18 feet from each other, along the walls. They are sometimes connected together by counter-arches. [REVETMENT].

COUNTER-GUARDS are outworks occasionally constructed on the exterior of the bastions or ravelins of a fortress in order to retard the formation of a breach in either of those works.

The counter-guard is in general merely a line of rampart surmounted by a parapet, and broken in direction so as to form two faces parallel to those of the work which it covers: it has less relief than the interior work, in order that the fire from the latter may have some superiority over that of the enemy in any lodgment which he may form in the counter-guard when he has taken it. Its breadth, in rear of the parapet, should not exceed about 18 feet, that, while there may be room for the defenders, the enemy may not have sufficient space for the establishment of a battery on its *terreplein;* and consequently, that he may not be able to breach the bastion or ravelin till, by mining or otherwise, he has destroyed the counter-guard.

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[*] *Heri-zoghe*, in its proper acceptation, means *leader of an army*, from the word *heer*, army, and the verb *ziehen*, to lead. *Graeve, graf, gheréf*, means, in all the Germanic dialects, the authority of a secondary magistrate. *Rakhen-burghe* means notable persons; they were employed as judges and guardians of public order.

[†] Chron. apud Script. Rer. Francic. tom. xii. p. 539, 541, 950, and tom. xiii., p. 476 and 534.

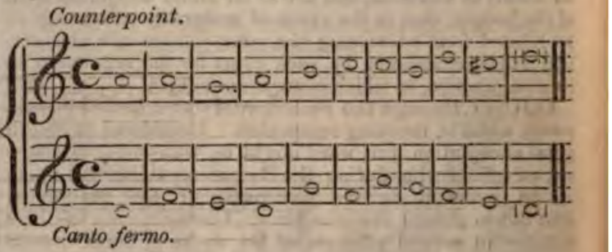
When counter-guards are constructed in front both of a bastion and of the collateral ravelin, the interval between their extremities unavoidably leaves a face of one of these works exposed; and, as a breach in the former would be more fatal to the defenders than one in the latter work, the lengths of the counter-guards must be determined by the condition that the exposed face be that of the ravelin.

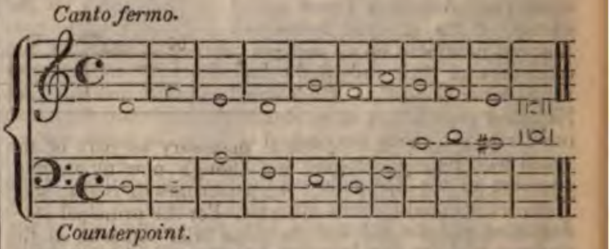
What are called counter-guards in the second and third systems of Vauban are, properly, bastions detached from the line of rampart called the enceinte. [See the work marked V, in *fig.* 3. BASTION.]

COUNTERMINE. [MINES, MILITARY.]

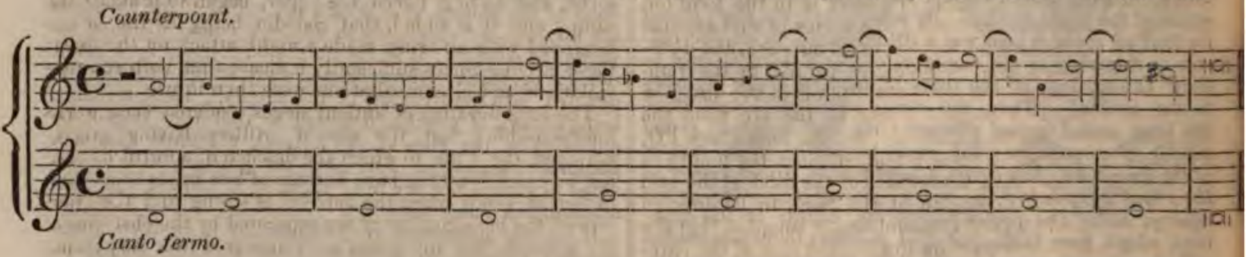
COUNTERPOINT, in music (*contrapunctum*), is a term now synonymous with harmony [HARMONY], and nearly so with composition; but the latter implies more of invention, of imagination, particularly as relates to melody, than counterpoint imports. Counterpoint in its literal and strict sense signifies *point against point.* In the infancy of harmony, musical notes or signs were simple points, or dots, and in compositions in two or more parts were placed on staves, over, or against, each other. Subsequently the term was applied to the parts added to a given melody, such melody taking the name of *cantus-firmus, canto-fermo,* or plain-song. [PLAIN-SONG.] Viewing it in this sense, the Padre Martini wrote his very elaborate and justly-celebrated *Saggio di Contrappunto sopra il Canto-Fermo* (1774), a work to which we refer every student who wishes to enter deeply into the subject. But Zarlino, in his *Institutione Harmoniche* (1589), ranks counterpoint as the principal part ('*soggetto principale*') in airs, &c., written in two parts. And many writers consider the word as applying generally to composition in parts, among whom are the learned Dr. Pepusch, the acute Spanish jesuit Eximeno, the industrious Dr. Lichtenthal, &c.; so unstable is musical language, so ill defined musical terms!

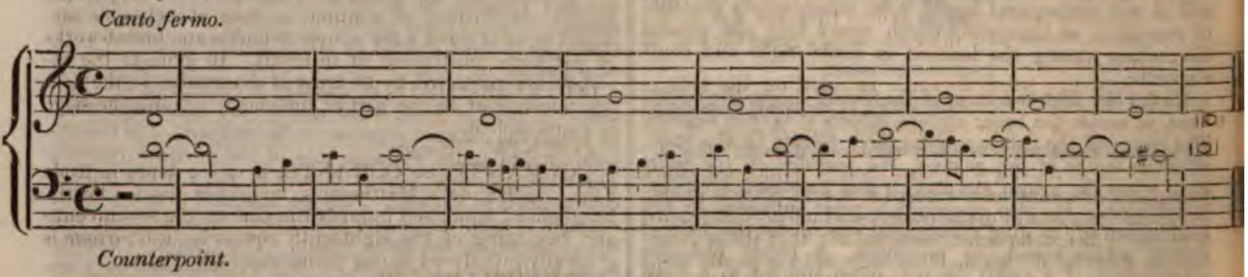
Counterpoint is divided into Simple, Florid or Figurate, and Double. *Simple Counterpoint* is a composition in two or more parts, the notes of each part being equal in value to those of the corresponding part, or parts, and concords. Johann Fux[*], in his *Gradus ad Parnassum* (1725), furnishes us with the following examples of this species, calling one part *cantus firmus,* or the *canto fermo,* the other *contrapunctum,* or counterpoint, and taking each in turn as the melody. We have here substituted the treble for the c clefs.





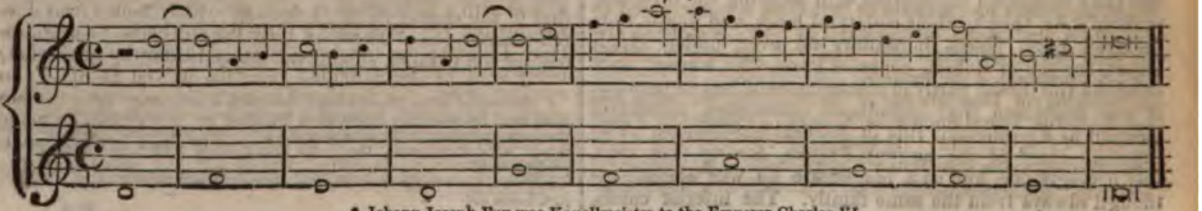
In *Florid Counterpoint* two or more notes are written against each note of the subject, or *canto fermo,* and discords are admissible. Examples from Fux.





Double Counterpoint, says the German theorist whose examples we have quoted, 'is a species of composition in which any of the parts may be transposed into the tenth above or below, omitting some notes, the subject remaining stationary.' Or, in other words, it is an inversion of the parts, so that the base may become the subject, the subject the base, &c., thus producing new melodies and new harmonies, 'in an artificial and wonderful manner,' adds Pedro Cerone, who seems to have been quite delighted with the contrivance; at a period, however, (1613) when subtleties of all kinds were more valued than in the present day. Fux gives the subjoined examples of double counterpoint, from which it will be seen that this is little more than an extension of florid counterpoint. In the first example the *canto fermo* is the base, the counterpoint the treble. In the second the *canto fermo* is the upper part, while the counterpoint is transposed a tenth lower, and becomes the base. In the third the *canto fermo* and counterpoint remain as in the first example, while the latter, transposed a tenth lower, is adopted as a base, as in Ex. 2; and thus is formed a composition in three parts.

Ex. 1.



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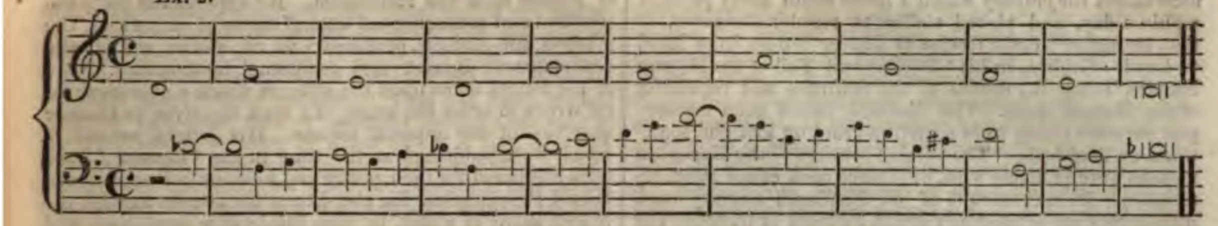
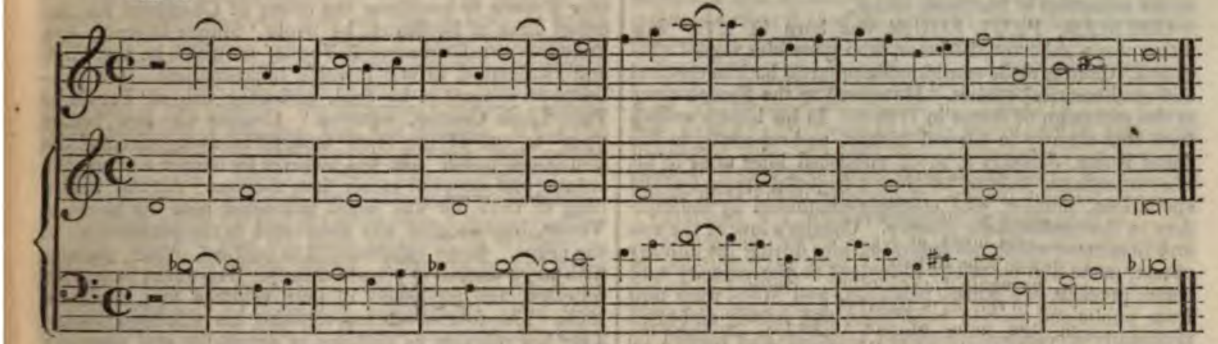
[*] Johann Joseph Fux was Kapellmeister to the Emperor Charles VI.

Ex. 2.



Ex. 3.



The study of Counterpoint is necessary as part of the education of a good musician, though now much neglected; it has, nevertheless, been sometimes carried to such a length as to become pure pedantry. For the principal rules of Counterpoint,—and also for some brief remarks on the question, 'whether the art of writing in parts,' was understood by the antients—see Harmony.

COUNTERSCARP, is that side of the ditch, about a fortress, which is opposite to the ramparts. The part which is in front of the salient angle of a work is in the form (on the plan) of a circular arc having the vertex of that angle as a centre; and, if the ditch be that of an outwork, the direction of the counterscarp is generally parallel to the rampart; the counterscarp of the main ditch is in the direction of a line which is a tangent drawn to the arc from the shoulder of the collateral bastion. [See the lines above FG, GE, *fig.* 1. Bastion.] This is intended, since the length of the flank is greater than the breadth of the ditch at the said angle, to allow the whole fire of the flank to be directed along the main ditch; and Cormontaingne suggests that the tangent should be drawn from the interior side of the parapet at the shoulder angle, in order that the fire of the man stationed there may more accurately graze the wall of the counterscarp.

A deep ditch, having the earth retained on the side of the country by a nearly vertical wall, is generally considered indispensable for a fortress, because the descent of the enemy into the ditch is thereby rendered difficult: the defence of the covered way is also thereby prolonged, since the enemy who may have entered it at one place is unable to advance on account of the traverses which are constructed across it. Carnot, however, recommends that the counterscarp side of the ditch should be formed in a gentle slope rising from the bottom to the level of the natural ground, in order that the garrison may with facility make those great sorties which he considers as one of the most powerful means of defence.

COUNTERVALLATION, a chain of redoubts executed about a fortress in order to prevent the sorties of the garrison: the works are generally unconnected with each other, but sometimes they are united by a continuous line of parapet. It has happened, during the continuance of a siege or blockade, that the investing corps has been menaced by an army coming up to relieve the fortress; in which case, when it is intended to act on the defensive without abandoning the siege, a chain of redoubts is constructed to strengthen that corps on the exterior: this is called a circumvallation; and originally, like the interior chain, it entirely surrounded the fortress.

According to Thucydides, the town of Platæa, when besieged by the Lacedæmonians, was surrounded by a line of palisades to prevent the egress of the garrison; and subsequently a circumvallation was added. At the siege of Alesia, the countervallation executed by Cæsar consisted of a rampart of earth, 12 feet high, which was surmounted by a parapet, probably of stakes, and by turrets, at the distance of 80 feet from each other. A triple ditch was formed between this line and the town. The Roman army was encamped beyond the line, and enclosed by a circumvallation of similar form; the latter was 14 miles in circumference. It is related in the continuation of the history written by William of Tyre, that, at the siege of Acre by Richard I. of England, the defenders made a sortie, and having forced the agger, began to plunder the camp; and it is added, that Saladin, being in the neighbourhood with an army, made a night attack on the lines: these circumstances sufficiently indicate that both countervallations and circumvallations were then in use.

The long duration of antient sieges rendered such works indispensable; but the use of artillery having greatly abridged the time to which the defence of a fortified place can be extended, they have become of less importance, and, in fact, it is only when the garrison is strong and the quarters of the besieging army are separated by the obstacles of the ground, that any works are considered necessary; and, in this case, instead of continuous lines of palisades and high towers of wood, a few simple redoubts and breast-works of earth are constructed at intervals. In general the besiegers are protected by an army of observation in the field when any effort on the part of the enemy to raise the siege is apprehended.

COUNTY. [Shire.]

COURANTE, or **CORANTO**, a quick dance in triple time. In Handel's, Mattheson's, and other lessons for the harpsichord, composed towards the end of the seventeenth and beginning of the eighteenth centuries, a *Courante* is generally introduced as one of the movements.

COURCELLES. [Hainault.]

COURIER, from the French *courir*, to run; a messenger sent in haste, or express; a bearer of despatches. The advantage of receiving the earliest intelligence, and of conveying orders with celerity, must have given rise to the employment of couriers at a very early period. Herodotus (viii. 98) gives a particular description of the speed of the Persian royal messengers who proceeded by relays. He says this mode of conveying intelligence was called by the Persians *ἀγγαρήϊον* (Angareïon); and the couriers themselves *ἄγγαροι*, (angaroi). Another description of couriers among the Greeks were called *ἡμεροδρόμοι*, who appear to have been armed with a light spear or dart, &c. (Suidas in voce.) Herodotus (vi. 105) says that a little before the battle of Marathon, Pheidippides (an *ἡμεροδρόμος*, a runner by profession) being sent by the Athenian generals, arrived at Sparta on the second day after leaving Athens, a distance not less than 140 or 150 miles. (See also Suidas, *v.* Ἱππίας.) The mode of employing couriers by Cyrus, as described by Xenophon (Cyri *Instit.* viii., 6), appears to be nothing more than the system already referred to as described by Herodotus. He ascertained the journey which a horse could fairly perform within a day, and placed stables at regular distances, so that messengers could receive or deliver letters from hand to hand.—Gibbon, in his 'Decline and Fall of the Roman Empire,' (chap. ii.) speaks of the swiftness and regularity of the Roman posts. The Romans called such messengers *cursores:* they were sometimes sent on foot and sometimes on horseback. The earliest couriers of the European nations were probably what have since been called running-footmen. In manuscripts of the thirteenth century such messengers are occasionally styled *trottarii* or trotters. The running-footmen or couriers, who accompanied John Duke of Marlborough in his wars, are several times represented in the tapestries at Blenheim-house.

COURIER, PAUL LOUIS, was born in 1774. His father was a substantial farmer, who gave him a good education. Courier made considerable progress both in classical and mathematical studies. He served in the French army in the campaign of Rome in 1798-9. In his letters written from that country to several friends, and especially in one dated Rome, January 8, 1799, published long after in his *Correspondance Inédite*, he gives a frightful account of the spoliations, plunder, and cruelties committed by the invaders in that unfortunate country. Courier's love of the arts and literature, which never forsook him during his military career, made him especially indignant at the rapacity with which precious sculptures, paintings, and MSS. were torn from public and private collections, and hastily and often ignorantly or carelessly huddled together and packed up for Paris, by which several valuable objects were injured or lost. He also describes the misery of the people of Rome, many of whom were absolutely starving, while the generals, commissioners, and other agents of the French Directory were revelling in luxury. On his return to France after the first peace, Courier published several translations from the Greek, such as Isocrates' Eulogy of Helena, Xenophon's treatise on the Command of Cavalry and on Equitation, and remarks upon Schweighæuser's edition of Athenæus. He also began a translation of Herodotus.

In 1806 he again served in Italy with the army that invaded the kingdom of Naples. He went into Calabria as far as Reggio, and witnessed the desultory but cruel warfare carried on in those regions. His letters from Naples, Calabria, and Puglia, 1806-7, give some valuable information concerning those times and events. Here again Courier spoke to his friends the language of truth; he was not more blinded by the proclamations of Napoleon the Emperor than he had been by those of the republican Directory. His testimony confirms what Colletta and other national writers have recorded of the atrocities of the Calabrian war. He comments severely on the judicial murder of Rodio, a colonel in the service of king Ferdinand, who was taken prisoner, tried by court-martial, acquitted, then tried again, Courier says by orders from Napoleon, condemned, and executed. He speaks also in the same letter, Naples, July 1807, of a courier from the queen being murdered near Naples, and his despatches sent to Paris, and other transactions of a similar nature.

Courier served with the rank of chef d'escadron in the Austrian campaign of 1809. After the battle of Wagram, he gave in his resignation, which was readily accepted; for his inquisitive turn of mind and independent temper made him looked upon as a troublesome person by the more thoroughgoing officers of Napoleon. On reaching Florence, he discovered in the Laurentian library an unedited MS. of Longus, of which he meant to avail himself for a translation of that author. Happening to upset an inkstand on the MS. by which accident a page was blotted, the librarian accused him of having done it purposely. Courier defended himself, but some persons in power at the Court of the Princess Eliza, Napoleon's sister, took part against him, and he was ordered out of Tuscany. Courier wrote a humourous account of the whole transaction, in a letter addressed to Mr. Raynouard, in which he did not spare his accusers. His translation of Longus was subsequently published in 1813 and was well received by the learned. Retiring to his farm at Veretz, in the department of Indre et Loire, he heard with no regret the fall of Napoleon, and expressed himself as satisfied with the charter given by Louis XVIII. if conscientiously fulfilled. He however began soon to find fresh matter for his satirical vein. His 'Livret,' or Memorandum-book, and his letters, give a curious picture of provincial politics, and of the state of society in the interior of France after the restoration. He exposes the petty absolutism and consequential tone of the local authorities, the prefects, sub-prefects, procureurs du roi, clerks, and all the departmental, district, and communal bureaucracy. One of his letters turns upon the style in which a procureur du roi writes to order the arrest of a man, the style, as Courier observes, of the imperial regime. His letters, several of which were published at the time in the 'Censeur,' have been compared for their power and humour to Pascal's celebrated Provinciales. He also directs his attacks against the priests, many of whom, by their intolerance, fanaticism, and meddling spirit, did infinite mischief to the cause of the Bourbons. When, in 1821, a subscription was opened all over France to purchase the estate of Chambord for the infant duke of Bordeaux, he wrote 'Simple Discours aux Membres de la Commune de Veretz,' for which he was tried, and condemned to one month's imprisonment. He published an account of his trial, under the title of 'Procès de Paul Louis Courier, vigneron.' Courier was now looked upon as one of the most formidable antagonists of the Bourbonist party. He was however by temper a grumbler, caustic and satirical rather than factious. At the beginning of 1825 he was found murdered near his house at Veretz, but no clue was discovered to the perpetrators of the crime. Some attributed it to political, others, perhaps with more reason, to private enmity. His works have been collected, and published in four volumes 8vo., Brussels, 1828. The fourth volume contains his unedited letters. They are valuable as sketches of actual life and manners, and as materials for contemporary history.

COURLAND, one of the Baltic provinces of Russia in Europe, is composed of the former duchies of Courland and Semigallia, of the old bishoprick of Pilton, and of Polangen, a district of Samogitia. It was until 1795 a possession of the Polish crown. The boundaries of Courland are, on the north, the gulf of Riga and Livonia; on the west, the Baltic sea; on the south, the province of Wilna, and Prussia; and on the east, the provinces of Vitepsk and Minsk. Its area, according to the inquiries of the Courland Society of Arts and Literature, is 9575 square miles, but according to Reymaim and Hassel, 10,689; and the population, which was 418,162 in 1790, may now be estimated, according to Arsenief, at about 450,000. The surface towards the sea coast is level, and presents a sandy plain about Mitau, Windau, and Goldingen, but its general character is undulating. It is intersected by two ranges of heights, one of which runs parallel with the Düna or Dwina, while the other takes a more westerly direction, and spreads its arms out in various directions. The most elevated points are the Huningberg, an agglomeration of sand, which is about 450 feet high, and the Silberberg. The coast is partly flat, and partly lined with sand-hills. The most northerly point is the dangerous promontory of Domes-Nüs, which is a continuation of the Blue Mountains, and stretches out between the Baltic and the gulf of Riga. Two-fifths of the soil are covered with forests or underwood, and a considerable part by moors of peat: nearly 15,000 acres are covered with marshes, or occupied by the 300 lakes and ponds and 118 small streams and rivulets which render the climate of Courland, though not unhealthy on the whole, raw, moist, and foggy. The largest of these lakes is the Usmaiten, in the western district of Goldingen, which is about twenty miles (thirty-five versts) in circumference; that of Sausken is ten miles long, and nearly two and a half broad; that of Angern is more properly a bay or 'haff' of the gulf of Riga. The principal river is the Düna, which skirts the eastern boundary of Courland, and of which the Aa or Bulleraa, one branch of which flows into it by a north-westerly course from the Livonian frontier, is a tributary. Besides these two rivers, Courland is watered by the Windau (which, entering it from the province of Wilna, takes a northerly course, forms a fine cataract near Goldingen, and falls into the Baltic at Windau), the Libau, the 'sacred' Aa, Anger, Bartau, &c. There is a canal of some importance near Goldingen; but that which, when completed, will be of far more essential benefit to the province, is the canal begun in 1825, which will unite the Windau and the Niemen. There are sulphurous springs at Smoden, Baber, and Baldanen.

The soil of Courland is in general light and sandy; it is most productive on the side towards Livonia. In the moors and morasses blocks of granite are occasionally found imbedded. Agriculture is the principal occupation of the inhabitants, who raise large quantities of rye, barley, and oats, but less in proportion of wheat, and less still of peas and beans. The crops of grain are more than adequate to the consumption, which is about 1,300,000 tshetverts (which is about 940,000 quarters). Flax and hemp are extensively cultivated, and of excellent quality; the seed of the first, which is sown in June, yields a crop in eight weeks. A little tobacco is raised, and some fruit is produced; but the ordinary sorts of vegetables are grown everywhere. Courland has not sufficient pasture land to make the rearing of cattle a common occupation. Horses and horned cattle are of an inferior kind, and the sheep yield but an indifferent quality of wool. The value of the fisheries along the coast does not exceed 1200*l.* or 1300*l.* sterling per annum. The supply of game is abundant. The extensive forests are in general situated on marshy ground, and consist principally of pines, firs, beeches, oaks, and elms, of low growth. Of minerals, Courland contains small quantities of bog-iron, lime, and gypsum. It has also coals and marble, but they have not hitherto been turned to much account. Amber is thrown up on the coast.

The population is of the same extraction as the Lithuanians, from whom the native Courlanders differ in no other respects than that they are more advanced in civilization, and use a slightly varied dialect. Independently of these native Courlanders (332,195 in the year 1828), there are several thousands of Livonians, Lithuanians, Jews, Germans, Krewincks (a race of Finnish descent), Russians, and Poles, scattered throughout the province. The inhabitants are mostly Lutherans; for out of the whole number returned in 1826, which was 384,789, there were not more than 23,627 who were not Lutherans. In 1825, the excess of births over deaths amounted to 7755. The Jewish community are about 10,000 in number.

The land belongs principally to the Courland nobility, who are either Germans or Poles; they are possessed of peculiar rights, such as their own civil jurisdiction, exemption from taxation, and not being liable to military service. These rights, where not in direct opposition to the Russian laws, were confirmed to them when the partition of 1795 transferred their country to Russia. Their numbers were 1126 in the year 1828. The towns are mostly inhabited by individuals of German extraction; they are free, and quite independent of the nobility. The peasant is by the law a serf in the strictest sense, and in vassalage either to the nobility or burgesses; he has no property which he can call his own, may be bought or sold, and is subject to the arbitrary chastisement of his owner. Of late however emancipation has been granted by many proprietors, and the lot of this unfortunate class has been greatly ameliorated. In fact, it is not probable that the Courland nobility will long hold out against the example set them by the landholders of Livonia and Esthonia.

The wants of each estate are mostly supplied by the serfs themselves, part of whom are brought up to mechanical arts; the peasant makes his own clothing, furniture, and domestic utensils, and constructs his own humble dwelling: he buys no manufactures. In 1831 the Courland manufactories were only one pottery, and one establishment for making copper wares; some lime-kilns and tile-houses, and three paper-mills, which employed but fifteen workmen. The only exception is the vast number of brandy distilleries.

Courland is under the general direction of the governor-general of the Baltic provinces, and the administrative duties devolve upon a civil governor, resident at Mitau; both are subordinate to the executive at St. Petersburg. The ecclesiastical affairs of the province, as respects the Protestants, are conducted by the consistory of Mitau, who have 141 churches in their jurisdiction; the Roman Catholics and Greeks together possess but 19 churches, the first being subordinate to the bishop of Samogitia, and the Greeks to the bishop of Pskof.

Courland is in general administered according to its own laws and usages; but in regard to fiscal and military affairs, it has been placed on the same footing as the other provinces of the empire. Dorpat is the university for this province; the only high school is the gymnasium at Mitau: the other establishments for education consisted, in 1832, of fifty-nine schools, conducted by 144 teachers, and attended by 1643 pupils, of whom 246 were females: thirty of those schools were maintained at the expense of private persons. The nobility continue to assemble at diets, and have a permanent committee at Mitau. The province is divided into head-captaincies, and each of these into two captaincies, besides the district of Pilten. Courland Proper, or the northern parts, contain the captaincies of Tuckum, of which Tuckum (about 1300 inhabitants) is the capital; and Goldingen, of which Goldingen, with about 2400, is the capital. Semigallia, or the southern parts, is divided into the captaincies of Mitau, of which Mitau on the Aa, the provincial seat of government, with about 13,000 inhabitants, is the capital; and Seelburg, of which Jakobstadt on the Düna, with about 1800 inhabitants, is the capital. The district or bishopric of Pilten lies in the south-west, and has Pilten for its capital, with about 400 inhabitants. This district is also known by the name of Hasenpoth, which is derived from that of the largest town in it, now become the capital: it has about 1100 inhabitants.

Courland has two shipping ports, Libau (abont 5000 inhabitants) and Windau (1200), both situated on its western coast. The exports of native produce consist of grain, hemp, flax, linseed, skins, salted meat, &c., and average about 130,000*l.* a year; the imports scarcely exceed 50,000*l.* per annum. The inland trade is monopolised by the Jews.

COUROUCOU. [Trogon.]

COURSE OF EXCHANGE. [Exchange.]

COURT-MARTIAL, a tribunal occasionally instituted for the purpose of trying military and naval men for the commission of offences affecting discipline in either of those branches of the public service.

Courts for the trial of rebels by martial law appear to have early existed in this country; and in the time of Henry VIII., the Marshal of England held one regularly for the trial of causes connected with military discipline. In the reigns of Elizabeth and her successor, those courts of war, as they were called, were superintended not by the marshal, but by a president chosen for the purpose. This president was probably a general or field-officer, but captains of companies were allowed to sit as members. The colonel of each regiment was charged with the duty of preparing the evidence relating to offences which fell under his cognizance, and of bringing it before the court. But courts-martial in their present form were instituted in the reign of James II.; and in the ordinances of war published in 1686 they are distinguished as general or regimental. Subsequently to the revolution, their powers have been expressly regulated by parliament, and are fully detailed in what is called the Mutiny Act, which is revised and renewed every year. Naval courts-martial are regulated by the statute 22 Geo. II., c. 33.

General courts-martial are assembled under the authority of the king, or of an officer having the chief command within any part of his Majesty's dominions to whom such authority may be delegated. Regimental courts-martial are held by the appointment of the commanding officer of the regiment. The East India Company's Mutiny Act empowers the governor-general in council, and the governor in council, at the presidencies of Fort William, Fort St. George and Bombay, and at St. Helena, to appoint general courts-martial, or to authorize any military man not below the rank of a field-officer to do so. What are called detachment courts-martial, may be either general or regimental, and their appellation is derived from the nature of the command with which the officer convening the court is invested.

The chief crimes of which a general court-martial takes cognizance are mutiny, abandonment of a fortress, post, or guard committed to the charge of an officer or soldier, disobedience of orders, and desertion: these crimes, if proved to their greatest extent, are punishable with death; and the penalty extends to any military man, being present, who does not use his best endeavours to prevent them. In desertion is included the fact of enlisting in any regiment without having had a regular discharge from that in which the offender may have last served. The practice of sending challenges between commissioned officers, is punished with cashiering; between non-commissioned officers and privates, with corporal punishment: and, in all cases, seconds and accessories are held to be equally guilty with the principals. Self-mutilation, theft, making false returns of stores, and neglect of ordinary duty, in non-commissioned officers and privates, are usually punished by the infliction of a certain number of lashes, not exceeding one thousand; and men of the former class may, in addition to other punishments, be suspended, or degraded to the ranks. There are many offences which might tend to the subversion of discipline, but which are hardly capable of being precisely defined, as immoralities, and behaving in a manner unbecoming an officer and a gentleman; of these the courts-martial take cognizance, and on conviction the offender may be dismissed from the service. At home, military men are not, in general, amenable to courts-martial for civil offences; but abroad, where there may be no civil courts, the case is different.

The provisions of the Mutiny Act affect not only the cavalry and infantry of the regular army, but extend to the officers and privates in the corps of artillery, engineers, and marines; to all troops in the employment of the East India Company, or serving in the colonies; to the militia during the time that it is assembled and being trained; and lastly, to the yeomanry and volunteer corps. All are subject, without distinction, to trial and punishment by courts-martial.

The rules of the service require that the president of every general court-martial should be a field-officer, if one of that rank can be obtained; but, in no case, must he be inferior in rank to a captain. And it should be observed, that none of the members are to be subalterns when a field-officer is to be tried. As the president has the power of reviewing the proceedings, it is prescribed, and the propriety of the regulation is manifest, that he be not the commander-in-chief or governor of the garrison where the offender is tried. A judge-advocate is appointed to conduct the prosecution in the name of the sovereign, and act as the recorder of the court.

No general courts-martial held in Great Britain or Ireland are to consist of less than thirteen or nine commissioned officers, as the case may require; but in Africa and in New South Wales the number may be not less than five; and, in all other places beyond sea, not less than seven. Commonly, however, a greater number are appointed, in order to guard against accidents arising from any of the members being found disqualified or falling sick. An uneven number is purposely appointed, in order that there may be always a casting vote; and the concurrence of two-thirds of the members composing the court is requisite in every capital sentence. No officer serving in the militia can sit in any court-martial upon the trial of an officer or soldier in the regular army; and no officer in the regulars is allowed to sit in a court-martial on the trial of an officer or private serving in the militia. Likewise, when marines, or persons in the employment of the East India Company, are tried, the court must be composed of members consisting in part of officers taken from the particular service to which the offender belongs. The members both of general and regimental courts-martial take rank according to the dates of their commissions; and there is a particular regulation for those who hold commissions by brevet. [Brevet.] They are always sworn to do their duty, and witnesses are examined upon oath.

In the accusation the crime or offence must be clearly expressed, and the acts of guilt directly charged against the accused; the time and place must be set forth with all possible accuracy; and, at a general court-martial, a copy of the charge must be furnished by the judge-advocate to the accused, that he may have full opportunity of preparing his defence. The accused has the power of challenging any of the members, but the reason of the challenge must be given, and this must be well founded, otherwise it would not be admitted; for the ends of justice might be often defeated from the impossibility of getting members to replace those who were challenged.

The court must discuss every charge brought against the accused, throwing out only such as are irrelevant; and judgment must be given either upon each article separately, or the decision of the court upon all may be included in one verdict. The evidence is taken down in writing, so that every member of the court may have the power occasionally of comparing the proceedings with his own private notes; and he is thus enabled to become completely master of the whole evidence before he is required to give his opinion. At the last stage of the trial the decisions of the several members are taken in succession, beginning with the junior officer on the court: a regulation adopted obviously in order to insure the unbiassed opinions of those who might otherwise be influenced by deference to the members who are superior to them in age or rank.

Regimental or garrison courts-martial are appointed by the commanding officer, for the purpose of inquiring into criminal matters of the inferior degrees; and they are empowered to inflict corporal punishments to a certain extent *only*. The articles of war require that not less than five officers should constitute a court of this nature, or three when five cannot be obtained. The practice is to appoint a captain as president, and four or two subalterns as the case may be; the court has no judge-advocate to direct it; therefore the members must act on their own responsibility. The proceedings are to be taken down in writing, and the sentence cannot be put in execution till it has been confirmed by the commanding officer, or by the governor of the garrison.

No commissioned officer is amenable to a regimental court-martial; but if an inferior officer or private should think himself wronged by such, he may, on application to the commanding officer of the regiment, have his cause brought before a regimental court-martial, at which, if the complaint is judged to be well founded, he may on that authority require a general court-martial to be held.

An appeal may be made from the sentence of a court-martial by the party who conceives that he has suffered injustice; the appeal lies from a regimental to a general court-martial; and from this to the supreme courts of law in the kingdom. It is easy to imagine, however, that the superior court will refuse to receive the appeal unless there should be very satisfactory evidence that the merits of the case have not been fairly discussed.

After the sentence of the court-martial has been pronounced, it is transmitted to the king, who may either confirm it, or, if sufficient reason should exist, may, on the ground that the process is not complete till the royal sanction has been given to the judgment, return it to the court for revision; or again, by virtue of his prerogative, he may remit the punishment awarded.

The chief distinction between the trial by court-martial and by jury is, that in the latter the verdict must be unanimous, while in the former the concurrence of a majority only in opinion determines the verdict. The writers on military law have endeavoured to show that the advantages in this respect are on the side of the court-martial: they contend that every member of such court delivers the opinion which he has formed from the evidence before him; while it may frequently happen in other courts that, in order to procure unanimity, some of the jury must surrender their own opinions. It may be observed, however, that in such a case the decisions are at least of equal value, since, in the event of a concession of private judgment, the verdict is in fact formed on the opinion of the majority.

(Grose, *Military Antiquities*; Tytler, *Essay on Military Law*; Samuel, *Historical Account of the British Army*; Simmons, *On the Practice of Courts-Martial*, with *Supplement*.)

COURT OF RECORD. [Courts.]

COURTESY OF ENGLAND is the title of a husband to enjoy for life, after his wife's decease, hereditaments of the wife held by her for an estate of inheritance, of which there was seizin during the wife's life, and to which issue of the marriage is born which by possibility may inherit. It is said to be called courtesy of England as being law peculiar to this country. In the law of Scotland however it is known under the title of 'jus curialitatis,' and it is also stated in a Rescript of Constantine, Cod. vi., 59, 1, and in the laws of the Alemanni, Lindenbrog, 'Codex Legum Antiquarum,' 1613, p. 387, 'Lex Aleman.' c. 92; though by the law of the Alemanni the husband took the inheritance under circumstances similar to those that establish the title to a life estate only in the English law. This title of the husband's tenancy of the estates of his wife depends upon a valid marriage, the seizin of the wife during marriage of the same estate respecting which courtesy is claimed, issue born alive during the wife's life capable of inheriting, and the death of the wife. Lands held by the wife descendible only to her sons would not, in case of the birth of a daughter, be subject to this title of the husband; nor would a child brought into the world by the cæsarean operation, after the mother's death, establish it. It differs from the similar rights of the wife to dower in several respects, the wife taking only part of the husband's estate, and being entitled to her tenancy though no issue is born; whereas the husband takes the whole estate, the caput baroniæ, and such indivisible rights out of which dower is not or cannot be assigned. By the custom of Gavelkind, a man may be tenant by the courtesy without having had issue by his wife.

COURTESY OF SCOTLAND, otherwise called in the law of that kingdom 'jus curialitatis,' or right of courtship, substantially the same with the courtesy of England. As the latter kingdom, five things are necessary to it; namely, arriage, that the wife is an heiress and infeft, issue, and e death of the wife.

As to the marriage, it must indeed be a lawful marriage, t it is not necessary that it be regular and canonical; it sufficient that it is valid in law, whatever be the precise m in which it became so. According to the ancient ough laws, c. 44, the courtesy extended only to such ds as the woman brought in tocher; but afterwards it s the lands to which she had right by inheritance, as the still is. It was always the law that the wife must be itably infeft and seised in the lands. The fourth requi- is, inheritable issue born alive of the marriage; that is say, the child born must be the heir of the mother's ate, and it must have been heard to cry; for though it otherwise in England, crying is here the only legal evi- ce of life. In the last place, by such issue the husband during the life of the wife only *jus mariti*, as Skene s (*De verb. signif. voce Curialitas*); after her decease has *jus curialitatis*; or as Blackstone speaks, with refer- e to the law of England, the husband by the birth of child becomes tenant by the courtesy *initiate*, but his ate is not *consummated* till the wife's death; which is fifth and last requisite to give the complete right of rtesy, the husband needing no seisin or other solemnity perfect his title.

COURTRAY or **COURTRAI**—in Flemish Kortryk,—a tified town of West Flanders, the chief place of the dis- ct of the same name, is about 16 miles east from Ypres d 25 miles south from Bruges, in 50° 49′ N. lat. and 3° ′ E. long. The town occupies both banks of the river s, by means of which it has communication with the prin- al towns of Flanders. Courtray existed in the time of e Romans, under the name of Cortoriacum, and as early the seventh century enjoyed the privileges of a munici- l city. The fortifications were begun in 1290; the castle s built in 1385 by Philip the Bold, duke of Burgundy. e works were enlarged and perfected, chiefly by the ench, who built a citadel in 1647. The Flemyngs, in 02, commanded by John count of Namur, encountered a ench army near to Courtray, and found on the field, after e battle, about 4000 gilt spurs, which caused it to be lled the battle of spurs. The town was taken by the ench successively in 1643, 1646, 1667, and 1683, and was stored to Spain by the peace of Ryswick. The French stroyed the fortifications in 1744: in 1793 they obtained victory over the English near the town, of which they ok possession a few days afterwards, and constituted it chief ace of the department of the Lys.

The population of the town, on the 1st January, 1835, as 18,858, and that of the entire parish 19,124; its streets e wide, the houses well built, and it contains several fine ildings, among others the Town-hall, a Gothic structure, e churches of St. Martin and of Notre Dame. This last- entioned was built by Baldwin count of Flanders. Cour- ay contains an exchange, a college, and two asylums for phans. A great part of the working population is em- loyed in spinning flax, and in weaving and bleaching en cloths and table-linen. The fine linens, known under e name of Courtray cloth, are made in the surrounding stricts, and sold unbleached in the weekly market held the town, where the pieces are finished and prepared for le to the consumers. The number of pieces of linen thus ought to the town annually amount to 30,000; about two- irds of this quantity are bought by the dealers in Courtray, d the remainder are sold to brokers from Bruges, Ypres, hent, and Brussels, and even to English and French mer- ants. The dyers of Courtray imitate with success the lour known as Turkey-red. Thread-lace and silk-lace e among the branches of industry pursued.

(Van der Maelen's *Dictionnaire Géographique de la Pro- nce de la Flandre Occidentale; Statistical Papers printed order of the Belgian government.*)

COURTS. The Courts of Common Law in this country, ke most other branches of our constitution, have grown gradually with the progress of the nation, and may be aced back, partly to the institutions of our Anglo-Saxon refathers, and partly to the more artificial systems intro- ced under the government of the Normans. From the rliest times of which we have any account, we find the ibunals of the Germanic nations consisting of a presiding ficer, called Graf Reeve or Earl, Comes or Count; together with certain assessors, whose denominations (and probably their functions also) were different among different tribes and at different periods. Of this nature were the earliest tribunals with which we are acquainted in this country. The most important of these, was that whose jurisdiction extended over a shire or county, in which the presiding officer was at first the Earl, Alderman, or Count; and subsequently, his deputy the Vice Count or Sheriff (Shire Reeve). This tribunal exercised ecclesiastical as well as civil jurisdiction, and the bishop sat as an associate to the earl or sheriff.

The judicial functions of this Court were divided into four distinct branches. The first included all ecclesiastical offenses; and in these the bishop was judge, and the count or sheriff his assistant, and if the delinquent disregarded the censures of the church, he enforced the sentence by imprisonment. The second branch (in which the sheriff was judge) included all temporal offences, such as felony, assaults, nuisances and the like. The third head included all actions of a purely civil nature: here the sheriff was the presiding officer, and executed the judgment; but the judges were the freeholders who did suit to the court. And fourthly, the sheriff's court held an inquest yearly of frank pledge. One branch of the jurisdiction of this tribunal was abolished by William the Conqueror, who separated the ecclesiastical from the civil power, and the bishop was no longer associated with the civil magistrate. The view of frank pledge now exists only as a form, but the other two branches of jurisdiction still subsist, though with diminished power and importance.

In order to exercise his criminal jurisdiction, the sheriff was required twice in every year to make a tour or circuit of his county. The power of determining felonies was taken away by Magna Charta, but the remains of this tribunal are still known as the sheriff's tourn, in which cognizance is taken of false weights, nuisance and other misdemeanors. The civil jurisdiction of the sheriff still continues in the county court, the powers of which were limited to cases under forty shillings, at least as early as the reign of King Edward I.: and that sum now (except in case of replevin) limits the ordinary jurisdiction of the county court.

The land over which the jurisdiction of the sheriff extended, is said to have been distinguished as reve land. The thanes or nobles had, in the lands granted to them, a similar jurisdiction of their own, as well civil as criminal. (1, Reeve's *Hist. of English Law*, 7.) The limits between the jurisdiction of the sheriff and that of the lord were strictly preserved. But when the lord had no court, or refused to do justice, or when the parties were not both subject to his jurisdiction, the suit was referred to the tribunal of the Reeve; and a suit commenced before the lord might be removed by the defendant before the higher tribunal.

The civil tribunal of the lord was similar to the county court in its constitution and its powers, except that the presiding officer was not a public functionary (as the Reeve was), but the bailiff of the lord. This tribunal still exists under the style of the court baron, and is incident to every manor in the kingdom. The judges are the freeholders who owe suit and service to the lord of the manor, and if there are not at least two such freeholders in the manor, the court is lost. This was formerly the proper court in which to commence real actions to try the title to lands within the manor. The lord's tribunal in criminal cases, in which he had the same powers that the sheriff exercised in his turn, was called the Leet.

The same powers which were exercised over a particular manor by the court baron and court leet, were also exercised over particular hundreds by the hundred court and the leet of the hundred. But the number of these courts was much diminished by stat. 14 Edward III., by which all hundreds, except such as were of estate in fee, were rejoined (as to the bailiwick of the same) to the counties at large.

Besides these courts of inferior jurisdiction, there was also a supreme tribunal, in which the king presided. In the Saxon age, and for some time after, the legislative, the administrative, and the judicial functions of the government had not been separated; and the Wittena-gemote, or meeting of the wise, was consulted by the monarch in all these departments indiscriminately. The Anglo-Saxon king had the same jurisdiction over his thanes that they had over their own vassals. He punished all enormous crimes committed against the king's peace. His court was likewise open to all those to whom justice had been refused in the inferior tribunals; and he had the power of punishing the judges if they pronounced an iniquitous sentence. It also seems probable that the king's court was a court of appeal, in which the judgments of all other tribunals, if erroneous, might be reversed.

The Norman Conquest does not seem to have produced any immediate change in the constitution of this national assembly, which thenceforth became more known as the Great Council. Its members exercised the same varied functions as under the Saxons; but when they sat in their judicial capacity, they had the assistance of the great officers of state and certain persons learned in the law, styled Justiciars, or Justices. William the Conqueror also created an officer to preside over judicial business, under the title of Chief Justiciar. The functions of this tribunal thus became gradually separated from the general business of the grand council; and from being held in the hall of the king's palace, it was distinguished by the style of Aula Regis. A great distinction was drawn between this and all the courts of Saxon origin, from the mode of authenticating its proceedings. There were at this time no written memorials of legal proceedings, and indeed of few other public acts; and when it was necessary to establish any judgment or statute which had been made by the king assisted by his council, it was usual to call the testimony of some of the nobles who were present, to bear *record* of the fact. In progress of time, all such proceedings were written down at the time on parchment, the nobles present signing their names as witnesses, and so bearing record of the truth of what was there alleged. The writing itself was called a record; and it was held to be evidence so conclusive, that when produced, nothing was allowed to be alleged in derogation of it. The entry of proceedings on record was adopted in the judicial, as well as in the other departments of the great council, and hence the Aula Regis became distinguished as *a court of record.* The power and importance of the Aula Regis rapidly increased. It not only maintained the former powers of the council in punishing offences against the public, in controlling the proceedings of inferior courts, and in deciding on questions relating to the revenue of the king, but it engrossed also a great portion of the 'common pleas,' or causes between party and party. And though we may suppose that it was only the more important causes that were taken into the Aula Regis, yet as early as the reign of Edward I., when the jurisdiction of the county courts was confined to 40*s.*, all actions above that amount were brought into the king's courts

The Aula Regis seems at a very early period to have been distinguished as exercising three several capacities, according to the different natures of the causes that were brought before it, which are treated of in our earlier legal writers as pleas of the king, common pleas, and pleas of the exchequer. The bond of connexion between these several jurisdictions was the chief justiciar, who presided over all of them. But in the reign of Edward III., this office was abolished, and thus were finally destroyed the unity of the Aula Regis and its connexion with the grand council, which became henceforth essentially a legislative body; and though it still retains traces of its original functions in its title of the *High Court* of Parliament, yet it has ever since ceased to exercise any judicial powers, except in cases of impeachment, or as a court of ultimate appeal. On the dissolution of the Aula Regis, the three courts of the King's Bench, the Common Pleas, and the Exchequer, had each of them a perfectly distinct and separate existence. The Court of King's Bench had the control of all inferior tribunals and the cognizance of all trespasses against the king's peace; the Court of Exchequer had cognizance of all cases relating to the revenue; and the Court of Common Pleas was the only tribunal for causes of a purely civil nature between private persons. The Courts of King's Bench and Exchequer still retain each of them its peculiar jurisdiction; and the Common Pleas is still the only court in Westminster in which a real action can be tried; but the great mass of causes between party and party may now be brought indiscriminately in any of the three courts. The mode in which the King's Bench and the Exchequer originally contrived by fictitious proceedings to appropriate to themselves a share in the peculiar jurisdiction of the Common Pleas will be found in the accounts given of those courts.

There was likewise another court, of a more limited character, which though held in the Aula Regis does not appear ever to have been under the control of the chief justiciar, viz., the Court of the Marshalsea, which had jurisdiction where one of the parties at least was of the king's household. Charles I. created by letters patent a new court, styled the Court of the Palace, with jurisdiction over all personal actions arising within the verge of the palace, that is, within twelve miles of Whitehall. These courts are now held together every Friday. The Court of Marshalsea is, in fact, disused, but the Palace Court is in active operation.

The Saxon kings had been in the habit of making progresses through their dominions for the purpose of administering justice. This practice was not continued by William the Conqueror; but he annually summoned his great council to sit at the three feasts of Easter, Whitsuntide, and Christmas, in three different parts of the kingdom: Winchester, Westminster, and Gloucester. But when the great mass of the legal business of the country was brought into the king's courts at Westminster it became necessary to take some more efficient measures for the trial of causes in the country.

The first expedient adopted was to appoint itinerant judges, justices in Eyre, who travelled through the kingdom, holding plea of all causes civil or criminal, and in most respects discharging the office of the superior courts. These itinera or Eyres usually took place after an interval of seven years.

About the end of the reign of Edward III. this system was wholly discontinued, except as to pleas of the king's forests, the functions of the justices in Eyre being superseded by the justices of Nisi Prius. This system was first established by a statute of Edward I., which, in order to prevent the expense of bringing up the juries to the king's courts at Westminster, provided that certain judges of those courts should be appointed to make circuits twice a year for the trial of issues, upon which judgment was to be given in the court above. This system is still in operation. The justices appointed by the commission of Nisi Prius also receive commissions of Oyer and Terminer and of gaol delivery, to authorise them to try criminals; and a commission of assize, under which they used to try a peculiar species of action called assizes. These actions have long been obsolete; but the name of assizes is still given to the sittings of the justices on circuit under their several commissions.

Under the Norman kings the fines, amerciaments, and forfeitures in the king's courts constituted a considerable portion of the revenue, and the administration of justice was held to be an important branch of the royal prerogative. But, like other branches of the prerogative, we sometimes find it in the hands of a subject, either by grant from the crown, or by prescription, which, in the eye of the law, supposes a grant, though such supposition is often at variance with probability; within the counties Palatine and other royal franchises, the earls or lords had regal jurisdiction, saving the supreme dominion of the king. They had the same right as the king to pardon offences; they appointed judges of eyre, assize, and gaol delivery, and justices of the peace; all legal proceedings were made in their name, and offences were said to be committed against their peace, as in other places against the peace of the king. These royal prerogatives were, for the most part, re-annexed to the crown by stat. 27 Hen. VIII.; but the form of the judicial establishment still remained. The County Palatine of Pembroke was abolished by the same statute, and the County Palatine of Hallamshire shared the same fate in the reign of Elizabeth. The Counties Palatine of Chester and Lancaster are still in existence, but have long ceased to be in the hands of subjects: they are now vested in the king. The palatinate jurisdiction of Durham continued to our own day to be possessed by the bishop, but this also has been, by statute of the year 1836, vested as a separate franchise in the king; and by another statute of the same year the secular jurisdiction of the bishop of Ely has been abolished.

But besides these palatinate jurisdictions, created to increase the power and gratify the pride of the nobles on whom they were conferred, the crown has also from time to time erected courts, with a jurisdiction limited in point of territory, and always under the control of the king's superior courts. If, in the Saxon times, the boroughs had courts similar to those of the Hundreds, there are now no traces to be found of their existence; but however that may

, it is certain that when commerce increased, it was found the utmost importance to the boroughs to be relieved from e jurisdiction of the feudal lord, and at the same time to ve some court of justice to apply to, less distant, dilatory, d expensive, than the king's courts at Westminster. id accordingly there has, at some time or other, been inted to almost every borough of any importance, the wer of exercising civil and criminal jurisdiction within tain prescribed limits. These courts were in all cases irts of record, but in other respects were not modelled on y uniform system. There was the greatest possible va- ty in their constitution and the extent of their powers. t the mode of proceeding in all of them was founded on common law and the practice of the superior courts, d a writ of error lay into the King's Bench, except from courts of London and the Cinque Ports. By far the ater number of these courts have fallen into disuse. One the causes of their inefficiency, viz., the want of com- ent judges and juries, has been partially removed by the nicipal Corporation Act, and a greater uniformity has en introduced by giving to all of them jurisdiction as far 20*l*. But in order to bring these courts into active ope- ion, it still remains for the legislature to provide some re simple machinery for carrying on their ordinary pro- dings; to give them better means of executing process, d of compelling the attendance of witnesses; to secure efficiency and responsibility of the inferior ministers, d to restrict the power of removing trifling suits into the perior courts. The general incompetency of inferior irts in carrying on the ordinary proceedings in a cause attested by a plan which has lately been introduced by legislature. Any of the courts at Westminster is au- rized, when a cause commenced there has been carried ough all its preliminary stages, to send it by writ of trial, be tried before an inferior judge, and, after trial, the se is returned, and judgment given in the superior court. the borough courts should ever be brought into a state activity, the system of writs of trial, which is merely a stitute for local tribunals, would probably fall to the und.

Whenever that time shall arrive it will be a curious thing trace the history of the administration of justice, which, der the Saxons, essentially local, rising from the smaller isdiction gradually to the higher, became, under the rman dynasty, centered in one point, the monarch being fountain of justice. This system of centralization, nected as it was with the principles of feudalism, which ng prevailed in this island with peculiar force, was ela- rated, in the course of centuries, to a high state of per- tion; it absorbed the remains of the antient local juris- tions, and stunted all attempts at the establishment of w. But as the artificial systems and feudal associations, which we are indebted to the Normans, gradually wear ay, the public mind is prepared to revert to the simpler d more popular institutions which existed ages ago among forefathers, and which seem to be peculiarly adapted to character of the Germanic nations.

There is a great distinction between courts of record and urts not of record: courts of record are the king's courts, d have power to fine and imprison, which is not the case th courts not of record. From the judgment of a court of ord there lies an appeal to the superior courts by writ of ror; in courts not of record this is effected by a writ of se judgment. The county court, court baron, and hun- ed court, are courts not of record. The other courts of mmon law which we have mentioned are courts of re- rd.

The great mass of the litigation of the kingdom is carried by means of the superior courts of Westminster. In ch of these courts there is a chief justice, and several isne judges. In the Exchequer these are styled the chief ron and barons, no doubt bearing in their title traces of e time when their office was filled by the lords of parlia- ent. Another remnant of the original constitution of the urts appears in the appellation of 'my lord,' which is ways given to the judges in their official character.

The number of puisne judges has varied at different es. During the reigns of the Stuarts there were fre- ently four, but after the revolution the number seems have been constantly three, in each court, constituting, gether with the two chief justices and the chief baron, twelve judges of England. By an act of parliament of year 1830, a fourth puisne judge was added to each court, making the total number of the superior judges of common law fifteen instead of twelve. But the five judges never sit all together, the full court consisting as formerly of four only.

During the terms, which are four periods in the year of about three weeks each, the three courts sit at Westminster for the determination of all questions of law; and twice a year fourteen of the judges make their circuits through England and Wales, to try, with the assistance of juries, all disputed questions of fact that arise in the country. Actions brought in Middlesex or London are tried in the same manner at the sittings which are held on certain days in and immediately after every term.

From each of the three courts there lies an appeal by writ of error to the Court of Exchequer Chamber. This is not a permanent court, consisting always of the same members; but from whichever of the three courts the appeal is made, it is brought before the judges of the other two. From the constitution of this tribunal, it is evident that where any considerable difference of opinion exists among the fifteen judges, it is incapable of effecting one of the chief purposes of a court of appeal—that of producing uniformity of decision: and, accordingly, a further appeal lies by writ of error to the House of Lords.

For the history of the courts, see Reeve's *History of the English Law*; Maddox's *History of the Exchequer*; Palgrave's *Progress of the English Commonwealth*; Allen's *Inquiry into the Prerogative.*

COUSERANS, or **COUZERANS**, or as it was written in the last century, **CONSERANS**, a district of the former province of Gascogne in France, is bounded on the east by the county of Foix, on the north and west by the district of Comminges, and on the south by the Pyrenees, which separate it from the province of Catalonia in Spain. Couserans is a mountainous district: it is watered by the Aubouigane, the Lez, the Orle, the Bordes, the Riverol, the Balameig, the Eschint or Eshint, the Aleth, the Ercé, the Courtignon, the Arac, and the Bau, all of which fall ultimately into the Salat, which carries off the whole drainage of the district into the Garonne. Couserans is now included in the department of Arriège. [ARRIE`GE.]

This district derives its name from its antient inhabitants the *Consoranni*, or *Consuarani*. Both these names are found in Pliny, who appears to be the first Roman writer that has mentioned them: they are not noticed by Cæsar. From the difference of the names some writers have supposed the existence of two people, but M. D'Anville, with apparently good reason, rejects this supposition. It is difficult to say whether, under the Roman division of Gaul, they were comprehended in the province of Novempopulana, or that of Narbonensis Prima: perhaps they were divided between them. Their chief town, Austria, or Consoranni, has assumed, from one of its bishops, its modern designation of St. Lizier. Upon the downfal of the Roman empire, Couserans came successively into the hands of the Visigoths and the Francs. In the feudal times it ranked first as a county, afterwards as a vice-county. It does not appear to have been included in the cession of Gascogne to the English by the treaty of Bretigny. The bishopric in which this district was comprehended originated probably about the end of the fifth century: the bishop was a suffragan of the archbishop of Auch. St. Lizier, from whom the episcopal town took its name, was elected bishop about A.D. 698, and died A.D. 742. The diocese is now merged in that of Pamiers, the bishop of which is a suffragan of the archbishop of Toulouse and Narbonne.

The town of St. Lizier has a population of about 1100, according to the last edition of Malte Brun. The bishop's palace has been converted into a *dépôt de mendicité*, or poor-house. There are in the neighbourhood of the town mines of copper and lead, and beds of grey, white, and black marble. The other towns are St. Girons (population 3634 for the town, 4381 for the commune), Castillon, at the junction of the Lez and Aubouigane; and Rimont, near the Bau: with the bourgs of Seix (pop. 1564 for the town, 3822 for the whole commune) and Massat (pop. 1635 for the town, and 9322 for the whole commune). (Malte Brun; D'Anville; Prudhome, *Dictionnaire Universel de la France.*)

COUTANCES, a city in the department of Manche in France, on the banks of the little river Soulle, 188 miles from Paris by Evreux, Caen, Bayeux, and St. Lo: in 49° 4′ N. lat., and 1° 28′ W. long. This city owes its name, and probably its origin, to the Romans: according to the tradition of the country, it was built by the Emperor Constantius Chlorus (father of Constantine the Great), who called it after his own name Constantia, or, according to Ammianus Marcellinus, Castra Constantia, from whence by corruption is derived the modern name Coutances. Before the division of France into departments, this place was the capital of the district of Cotentin [Cotentin], to which it gave name. There are no Roman antiquities at Coutances, except an aqueduct, said to be of Roman original, but which has been repaired since their time. The cathedral (Notre Dame) is one of the finest Gothic buildings in France; the church of St. Pierre is also worthy of notice. The population of the town in 1832 was 8957. The inhabitants carry on considerable trade in agricultural produce (especially horses); and manufacture bed-ticking, tape, and parchment.

The bishopric of Coutances originated in the fourth century. It comprehends the department of Manche. The bishop is a suffragan of the archbishop of Rouen.

Coutances is the capital of an arrondissement, having a population (in 1832) of 136,847. It has a *tribunal de commerce*.

COUTHON. [Committee of Public Safety.]

COUTRAS, a small town in the department of Gironde, at the confluence of the Dronne and the Isle. Here the Huguenots, under Henri of Navarre, afterwards Henri IV. of France, defeated the army of the French King Henri III., under the duke of Joyeuse, who fell in the action, 20th October, 1587.

COUVIN. [Namur.]

COVE, is a small inlet on a rocky coast. When the indentation is wide and deep enough to admit vessels of fifty tons burden and upwards, it is called a harbour; but when it is too narrow for that purpose, and can only be entered by small craft, it is called a cove.

COVENANT is a written agreement, by deed under seal, between two or more persons, whereby some act is agreed to be done; or, upon the happening of some event, some charge or liability is agreed to be borne by some party thereto. The person entering into the agreement, and subjecting himself to the penalty of its breach, is called the covenantor, and the person with whom it is made, the covenantee. The portion of the agreement which expresses the character of the liability of the covenantor is called the lien.

Covenants take many varieties of forms, and are variously stated. They usually arise from the express words of the parties, but any words denoting the intention are sufficient; as, 'I agree,' 'I am content.' They are sometimes inferred, by law, from the relation of the parties or from the nature of their contract. Thus a demise for a term of years, will sustain, upon an implied covenant, an action for quiet enjoyment.

The lien of covenants usually contains introductory words, declaring the extent of the covenant. If there are several covenantors, it usually declares the covenant to be several, or joint, or joint and several. In case the covenant is several, each of the covenantors covenants for himself alone, and may be sued alone; if joint, each of the covenantors covenants for himself as well as for each other, and all must be sued together; if joint and several, each party covenants for himself, and as a surety for those with him, and an action, in this case, may be brought against one of the covenantors only, or, against all. The courts however, even in these cases, regard the interests of the parties; and if the interest, or cause of action, is joint, the action must be brought against all the covenantors, though the terms of their covenant may be joint and several; and if the interest, or cause of action, is several, though the covenant is joint, the parties must be severally sued. The reason is, that difficulty would arise if judgment in distinct actions should be asked for one and the same cause against several persons, or against persons whom there is no cause of action to affect. The mere terms of a covenant are not therefore a sufficient guide to determine the propriety of joining parties in an action upon it.

Covenants are divided into real and personal, though, as now used, they are as to remedy, chiefly personal.

The former affect realty, and may bind the real estate of the covenantor in the hands of the heir and of his assigns. Personal covenants bind only the covenantor, or his executors and administrators, that is, his personal estate in their hands. The objects of real covenants are generally to afford some specific advantage or protection to those into whose hands the realty to which they relate shall pass; or, to secure the performance of some specific duty by those who may possess the realty to which they relate.

In the construction of all covenants the intention of the parties is regarded. The general rules usually laid down for this purpose depend upon the presumed intention of the parties; and for this reason, a statute declaring the effect of certain covenants, and enabling them to be stated in a few words, has long been desired, in order to shorten the length of conveyance and to avoid litigation. By such a measure the express intention of the parties would always appear in deeds, by their adoption of the abbreviated language of the law, or by their restraining its general effect. Indeed, in the statutes relating to the registry of deeds in Yorkshire, it is declared that the words 'grant, bargain, and sell' are to operate as covenants for title, for farther assurance, and for quiet enjoyment.

The intention of the parties, however, is not always sufficient, in the case of real covenants, to secure their object. It is frequently desirable, when the possession of land is parted with, that the purchaser and his assignees should always be able to resort to the vendor or to his heirs for protection, or that the purchaser and his assignees should perform certain duties, and that the covenants for these purposes should always be connected with the party enjoying the land, or, in other words, that such covenants shall 'run with the land.' In order that this shall occur, the mere intention of the parties, however definitely expressed, is insufficient; there must also be privity of estate. When land mortgaged in fee was demised by the mortgagor, a covenant entered into with him was merely personal; for though in equity the owner of the estate, at law the mortgagor is a mere stranger to it: there was no privity of estate between the lessor and lessee. (*Webb* v. *Russell*, 3 Term Rep., 402, 678; 1 Hen. Blackstone, 562.) The assignee also must come in of the same estate as his assignor, or the covenant will also be merely personal. Thus, a covenant to pay a fee farm rent, in a deed enabling the purchaser to appoint his estate to uses, became a mere personal covenant by the exercise of the power to appoint, for the appointment did not convey the same estate that the purchaser had acquired. (*Roach* v. *Wadham*, 6 East. 289.) [Uses.] The Real Property Commissioners have stated three rules respecting covenants running with the land.

1. A covenant to run with the land so as to bind the assignee, or to give to him the benefit of it without his being named, must relate directly to the land, or to a thing parcel of the demise: such is a covenant to pay rent, to keep buildings in repair, or to observe particular modes of cultivation. 2. When it respects a thing not in existence, but which, when it comes into existence, will be annexed to the land, the covenant will bind the assigns by naming them, but will not bind them unless named: such is a covenant to erect buildings, or to plant trees. 3. When it respects a thing not annexed, nor to be annexed, to the land, or a thing merely collateral, or in its nature merely personal, the covenant will not run, that is, it will not bind the assignee, nor pass to him, even though named: such as a covenant to haul coals to the lessor's house, to grind corn at his mill, or to buy or sell stock in a certain manner. These rules, however, though originally laid down with reference to leases, have been treated as applying to cases not involving the relation of landlord and tenant. They involve many subtle distinctions, and it has been proposed that all covenants, of whatever nature or for whatever purpose, should, unless a contrary intention is expressed, or may be inferred from the instrument, bind the assignee of terms.

The Law Commissioners also divide covenants where the relation of landlord and tenant, or lessee and reversioner, does not exist, into three classes. 1. Covenants made *with* the owner of the land to which they relate; as covenants for title, to indemnify from existing charges, for farther assurance, &c., which supply the old remedy of warranty, with the difference, that pecuniary damages, instead of the recompense of land, are obtained under them. 2. Covenants made by the owner of the land to which they relate; as to build on certain land, to keep up a road, to keep a space of ground open. 3. Covenants relating to the production of writings and title-deeds; as in cases where an estate is divided into fractions and sold to different persons, one of the purchasers, usually the purchaser of the most valuable share, holding the deeds and writings. It has been contended that a covenant by the owner of land respecting the land should always run with the land; but this doctrine has not been established, and if sanctioned, might give an injurious control over property for an indefinite period.

At common law, none but parties or privies, by contract or estate, could take advantage of covenants, or be bound by them. Upon the dissolution of monasteries, great evils were found to follow from this state of the law, the lands then seized by the crown, and afterwards transferred to patentees or grantees of the crown, being leased under covenants, which ceased to be binding by the absence of any privity between the lessees of the church lands and the new owners of such lands. To correct these evils the 32 Hen. VIII. c. 34, was passed, which gave to the grantees of reversions generally, and to the grantees and patentees of the crown the same advantages and remedies as were possessed by the original lessors or grantors of the land. The statute placed the parties to whom it applied in the position of those who were privy to the original contract. To covenants, however, merely collateral, the statute does not apply; that is, if the covenant is beneficial to the lessor, without regard to his continuing the owner of the estate, it is a collateral covenant, upon which the assignee of the reversion cannot sue. The assignee of the reversion, however, is entitled to the benefit of all covenants entered into by a lessee with the lessor, his heirs and assigns, provided such assignee be the owner of the reversion immediately expectant on the term, and provided the estate he has be the same estate which, or a portion of which, the lessor had at the time of granting the lease. If there be a title paramount by escheat or otherwise, the covenant is at an end, if such title defeats the lessor's estate.

It was a common practice, in order to secure the performance of a covenant, to take a bond as an additional security. It enabled the obligee to elect between an action of debt for the penalty of the bond, or to proceed upon the covenant. The reason of the practice was, that at common law a devisee of the real estate of the covenantor was not liable to an action for a breach of covenant, though by the statute of fraudulent devises (3 W. and M. c. 14), he was liable to an action for breach of the condition of the bond. This is now remedied by the 1 W. IV. c. 47, which extends the provisions of the 3 W. and M. to the case of a covenant.

By the 3 and 4 W. IV. c. 42, actions on covenants must be brought within twenty years after the cause of action has arisen.

Covenants may be discharged by a release, by their performance, by the destruction of the seal, or by the destruction of the interest upon which the covenant depends. They may be void at the time of their creation upon account of the personal incapacity of one of the parties to contract, as being an idiot or a lunatic, or upon account of their object being illegal, as relating to bribery, gaming, illegal insurances, lotteries, sales of offices, simony, smuggling, stock-jobbing, usury, or to wagers. They will also be void if opposed to public policy, as not to trade generally, though a covenant not to trade in a particular place, or with a particular person, would be valid.

COVENANT and **COVENANTERS**. [Cameronians.]

COVENTRY, a city locally situated in the hundred of Knightlow, in the county of Warwick, of which however it forms no constituent portion; having been made, with several adjacent villages, a separate county, by an act of Henry VI. in 1451, and entitled the County of the City of Coventry. The city, exclusive of the suburbs, is about three quarters of a mile in length, and stands on a small elevation which slopes gradually towards the east and west. The situation is nearly in the centre of the kingdom, on a level tract, which, near Coventry, is about 300 feet above the sea level; 91 miles N.N.W. from London, and 10 N.N.E. from Warwick. It is a place of great antiquity, but its origin appears to be only obscurely known. By some writers it is asserted and by others denied that the name is derived (as Covent Garden from Convent Garden) from a spacious convent which was founded, says Leland, by king Canute, and was destroyed by the traitor Edric in 1016. However this may be, it is certain that in the reign of Edward the Confessor, in 1044, earl Leofric, a powerful lord of the large territory of Mercia, with his wife, the lady Godiva, founded at Coventry a magnificent Benedictine monastery, and appropriated to it half the town and twenty four lordships, besides enriching it with a profusion of rich presents. The capacious cellar of the monks still exists, measuring 75 yards in length by 5 in breadth. From the date of this religious establishment the prosperity of the place appears to have taken its rise. After the Conquest the lordship of Coventry came to the earls of Chester. Leland, writing in the reign of Henry VIII., says that the city was begun to be walled in in the time of Edward II., and that it had six gates, many fair towers, and streets well built with timber. Other writers speak of thirty-two towers and twelve gates. The walls were demolished by Charles II. in consequence of the active part taken by the citizens in favour of the parliamentary army. During the monastic ages Coventry had a large and beautiful cathedral, similar to that at Lichfield. At the Reformation it was levelled to the ground by order of Henry VIII., and only a fragment or two now remain. There are three antient churches, of which St. Michael's is by far the most remarkable for architectural beauty and ornament. It was originally built in 1133, in the reign of Henry I., and was given to the monks of Coventry by Ranulph earl of Chester, in the reign of Stephen. Sir Christopher Wren is said to have considered this church a masterpiece of the lighter Gothic style. The spire rises finely tapering out of an octagonal prism upon the tower, and its summit is 303 feet from the ground. The interior is lofty and finely ornamented with rows of clustered pillars and arches, with a roof of curiously carved oak and numerous windows of antient coloured glass. (*Description of St. Michael's Church*, by William Reader, Coventry.) Trinity church is a Gothic edifice, but heavier and less elegant than St. Michael's. The height of its spire is 237 feet. St. John's is a plain cruciform structure, founded in the reign of Edward III. A handsome new church has been built under the parliamentary commission. One of the richest and most interesting vestiges of the ornamental architecture of the fifteenth century in Coventry, and perhaps in England, is a capacious building called St. Mary's Hall, erected in the reign of Henry VI. The principal room is 63 feet by 30, and 34 feet in height. Its grotesquely carved roof of oak, the gallery for minstrels, the armoury, the chair of state, and especially the great painted window facing the street, are admirably suited to furnish a vivid idea of the manners of the age in which Coventry was the favourite resort of princes. A tapestry made in 1450, measuring 30 feet by 10, and containing 80 figures, is a curious and beautiful specimen of the drawing, dyeing, and embroidery of that period. This hall is the property of the corporation, and is used as a council chamber, and for civic festivities. (*Guide to St. Mary's Hall*, by William Reader, Coventry.) In the market-place a richly ornamented Gothic cross, considered one of the finest in the country, was erected in the sixteenth century, and taken down in 1771 to gratify the bad taste of the inhabitants. It was hexagonal, 57 feet high, with eighteen niches of saints and kings. (Gough's *Brit. Topog.*, vol. ii., p. 303.) The hospital in Gray Friars' Lane is very antient, and richly ornamented with carved oak. The building called the Mayor's Parlour is of the sixteenth century: it is used for judicial purposes.

Coventry has been the seat of two parliaments; one held by Henry IV. in 1404, called *Parliamentum Indoctum*, from being composed of laymen inimical to the interests of the clergy, or, as some writers say, from the fact of lawyers being excluded. The other by Henry VI. in 1459, called *Parliamentum Diabolicum*, from the numerous attainders it issued against the Duke of York and his adherents.

Froissart and Holinshed give a graphic account of the combat at Coventry of the Duke of Norfolk and the Duke of Hereford, afterwards Henry IV. See also Shakspeare's *Richard II.*

Coventry has been always renowned for its exhibition of pageants and processions; and in the monastic ages it was remarkable for the magnificent and costly performance of the religious dramas called Mysteries. Accounts are extant of these solemn shows as early as 1416. They were performed on moveable street-stages chiefly by the Gray Friars, on the day of Corpus Christi. The subjects were the Nativity, Crucifixion, Doomsday, &c., and the splendour of the exhibitions was such that the king and the royal family, with the highest dignitaries of the church, were usually present as spectators. (See *A Dissertation on the*

Pageants or Dramatic Mysteries antiently performed at Coventry, and other Municipal Entertainments, by Thomas Sharp, 4to., 1825.) The plates in this work are extremely interesting, and the facts are valuable as indicating the great progress of society since the time when kings and prelates witnessed with gratification and applause what would now shock the feelings and be condemned by the judgment of the humblest member of society. The following items from a bill of expenses inserted in the work just mentioned, will give an idea of these dramatis personæ:—'Payd for 2 pound of hayre for the divill's head, 3*s.*; mending his hose, 8*d.* Black canvas for shirts for the damned, 4*s.* Red buckram for wings of angels (represented by naked children), 7*s.* Paid for a cote for God, and a payre of gloves, 3*s.*' The following work also contains much curious information: 'The Pageant of the Company of Sheremen and Taylors in Coventry, as performed by them on the festival of Corpus Christi, with other Pageants at Coventry, on the visit of Henry VI. and his Queen in 1455; of Prince Edward in 1474; of Prince Arthur in 1498, &c.; with the Verses recited in character on those occasions.' By W. Reader, Coventry. Other writers give descriptions of the costly pageants exhibited to Henry IV., Henry VII., and several other kings. Coventry was the favourite residence of Edward the Black Prince. Here also Queen Elizabeth delighted to see 'The game of Hock Tuesday,' which represented the massacre of the Danes by the English in 1002, and it was for her especial amusement that, in addition to a ring for baiting bulls, another was put down for badger-baiting, her favourite sport. The peculiar predilection of the people of Coventry for gorgeous pageantry is still displayed in the celebrated processional show at the great fair on the Friday in Trinity week, when many thousands assemble to see the representative of lady Godiva. The legendary origin of this singular exhibition is as follows: Earl Leofric had subjected the citizens of Coventry to a very oppressive taxation, and remaining inflexible against the entreaties of his lady for the people's relief, he declared that her request should be granted only on the condition that she should ride perfectly naked through the streets of the city; a thing which he supposed to be quite impossible. But the lady's modesty being overpowered by her generosity, and the inhabitants having been enjoined to close all their shutters, she partially veiled herself with her flowing hair, made the circuit of the city on her palfrey, and thus obtained for it the exoneration and freedom which it henceforth enjoyed. The story is embellished with the incident of Peeping Tom, a prying inquisitive tailor, who was struck blind for popping out his head as the lady passed. His effigy is still to be seen protruded from an upper window in High Street, adjoining the King's Head tavern. In Gough's edition of Camden's 'Britannia,' (vol. ii. p. 346) it is stated that Mathew of Westminster, who wrote in 1307, that is, 250 years after the time of Leofric, is the first who mentions this legend, and that many preceding writers who speak of Leofric and Godiva do not notice it. In Rudder's 'Gloucestershire,' p. 307, a similar legend is said to be related of Briavel's Castle. The Coventry procession, as at present exhibited, began only in the reign of Charles II., in 1677: it consists principally of Saint George of England on his charger, lady Godiva, a female who rides in a dress of flesh-coloured muslin, with flowing hair, on a beautiful gray horse; then follow the mayor and corporation, the whole of the city companies, the wool-combers, knights in armour, Jason, bishop Blaize, &c. &c., all in splendid dresses, with a great profusion of brilliant ribands, plumes of feathers, and numerous bands of music. (*The History and Description of Coventry Show Fair, with the History of Leofric and Godiva.* By W. Reader.)

The county from N.E. to S.W. measures about eight miles, and from E. to W. about seven miles, containing an area of 18,161 acres. The soil is fertile, and chiefly laid out in pasturage. It is of a red colour, and rests on the red sand-stone of the district. The county, besides the city and suburbs, consists of the parishes of Foleshill, Exhall, Anstey, Stoke, Stivichall, with part of Stow and Shelton. These parishes include a total of nineteen villages and hamlets, some of which are very populous, but they have no share in the civil and political privileges of the city. The city, under the Municipal Corporation Act, is divided into six wards, governed by a mayor, twelve aldermen, and thirty-six councillors.

The assizes are regularly held in the city, and quarter-sessions are held, of which the recorder is sole judge, besides which there are various other courts.

Besides the patronage of many important appointments, the corporation had formerly the distribution of charitable funds amounting to 7300*l.* per annum. The following are the principal institutions of this kind, which in Coventry are very numerous. Sir Thomas White's charity, founded in the reign of Henry VIII., produces annually between 2000*l.* and 3000*l.* The Bablake Men's Hospital, of which an income of about 1500*l.* is devoted to the maintenance of poor and aged men, was founded by the will of Thomas Bond, in 1506. The Bablake Boys' Hospital has an income of about 940*l.*, appropriated to the maintenance and education of young and poor boys. Besides these, there are twelve other considerable charities, and several minor ones. A full account of these charities is given in the 'Reports on Charities.'

The free school is a richly endowed institution founded by John Hales in the reign of Henry VIII. Here Sir William Dugdale and several other eminent men were educated. The income is about 900*l.* per annum; and the school has two fellowships at St. John's Coll., Oxford, one at Catherine Hall, Cambridge, and six exhibitions at either university. It appears from the Charity Commissioners' Reports, that the school was grossly mismanaged at the time of the inquiry; the fine school-room was locked up, and the books of its library, which had not been used to light the fire with, were missing or torn and covered with mould. Since that time a new head-master has been appointed, and at present the school is again attended by a number of pupils. There is a large Lancasterian school, Sunday schools, and several good private academies; with places of worship for Catholics, Presbyterians, Unitarians, Independents, Baptists, Methodists, and Quakers. The general appearance of the town is gloomy and crowded; many of the streets being narrow, and darkened by the projection of the upper stories of houses built in the fifteenth and sixteenth centuries. The city retains its antient limits; any enlargement of which is prevented by the surrounding commons, called the Lammas Lands, on which the freemen have the right of pasturing their horses and cows. The streets are lighted and watched at night, but are not generally paved, or supplied with public sewers. In addition to the buildings already noticed, may be named the County Hall, a stone edifice erected in 1785, and the Draper's Hall, which is ornamented with Tuscan pilasters, and is elegantly fitted up for assemblies and other public entertainments. The gaol has recently been rebuilt by the corporation at an expense of above 16,000*l.*

In the time of the Edwards and Henries the tradesmen of Coventry were famed for their affluence. In 1448 they equipped 600 armed men for the public service. Until the war between England and France in 1694, the staple manufacture was woollens, broad-cloths, and caps; and previous to 1580 there existed a famous manufacture of blue thread, the water of the small river Sherbourn, which passes through the city, being an excellent menstruum for dyeing this colour. During the eighteenth century there was a flourishing manufacture of tammies, camlets, shalloons, calimancoes, gauzes, &c., but it is no longer continued. At present the staple manufactures are ribbons and watches. The former was introduced about 1730, and in 1830 the number of individuals to whom it afforded employment in the city and adjacent villages is said to have been about 16,000, the number of looms being nearly 3000. Of late years this manufacture has not been so prosperous, for which one of the reasons assigned is the fact of a great portion of the proprietary manufacturers residing in London. (See *Report on Manufactures.*) The manufacture of watches was introduced about 1800, and has become so extensive that the annual number manufactured is equal to that of London. The local position of Coventry is favourable for commercial operations, being nearly central between the four greatest ports of England—London, Bristol, Liverpool, and Hull; possessing great facilities of water communication by the Coventry and Oxford canal, which opens into the Grand Trunk navigation, and having one of the main roads from London to Birmingham passing through its streets.

There are several guilds, or incorporated trading companies, some of which are possessed of considerable property, which they spend in charity and festivities. The city of Coventry sends two members to parliament. The elective franchise was first granted in the reign of Edward I. The number of electors since the Reform Act, is 5000. The population of this city in 1377 was 7000, at which time there were only 18 towns in the kingdom having 3000 inhabitants. In 1831 the population was 27,070, of whom 204 families were employed in agriculture, and 4913 in trade and manufactures. There is a weekly market on Friday, and fairs on the second Friday after Ash Wednesday, May 2nd, Friday in Trinity week, August 26th and 27th, and November 1st, for the manufactures of the city, and for cattle.

(*Antiquities of Warwickshire*, by Dugdale; *History and Antiquities of Coventry*, 12mo., 1810; *New Coventry Guide*, by W. Reader.)

COVERDALE, MILES, bishop of Exeter, a native of Yorkshire, was born in 1487. He was educated in the house of the Augustine friars in Cambridge, of which Dr. Barnes, afterwards one of the Protestant martyrs, was then prior. Whether he took a degree at the University of Cambridge in early life seems uncertain; but Godwin says he afterwards received the degree of D.D. from the University of Tübingen, and was, though later in life, admitted *ad eundem* at Cambridge. Being in his early years attached to the religion in which he was brought up, he became an Augustine monk. In 1514 he entered into holy orders, and was ordained at Norwich; but he afterwards changed his religious opinions. Bale says he was one of the first who, together with Dr. Robert Barnes, his *quondam* prior, taught the purity of the gospel, and dedicated himself wholly to the service of the Reformation. About this time, probably 1530 or 1531, the reformed religion began to show itself at Cambridge, where various eminent men, and Miles Coverdale amongst them, began to assemble for conference on those points which had been discussed by the reformers abroad. In 1532 he appears to have been abroad, and assisted Tyndale in his translation of the Bible; and in 1535 his own translation of the Bible appeared, with a dedication to King Henry VIII. It formed a folio volume, printed, as Humphrey Wanley (Lord Oxford's librarian) thought, from the appearance of the types, at Zürich, by Christopher Froschover. He thus had the honour of editing the first English Bible allowed by royal authority, and the first translation of the whole Bible printed in our language. The Psalms in it are those now used in the Book of Common Prayer. About the end of the year 1538 Coverdale went abroad again on the business of a new edition of the Bible. Grafton, the English printer, had permission from Francis I., at the request of King Henry VIII. himself, to print a Bible at Paris, on account of the superior skill of the workmen, and the goodness and cheapness of the paper. But, notwithstanding the royal license, the Inquisition interposed by an instrument dated December 17, 1538. The French printers, their English employers, and Coverdale, who was the corrector of the press, were summoned before the inquisitors, and the impression, consisting of 2500 copies, was seized and condemned to the flames. The avarice of the officer who superintended the burning of the copies, however, induced him to sell several chests of them to a haberdasher, for the purpose of wrapping his wares, by which means a few copies were preserved. The English proprietors, who had fled at the alarm, returned to Paris when it subsided; and not only recovered some of the copies which had escaped the fire, but brought with them to London the presses, types, and printers. This importation enabled Grafton and Whitchurch to print, in 1539, what is called Cranmer's, or 'The Great Bible,' in which Coverdale compared the translation with the Hebrew, corrected it in many places, and was the chief overseer of the work. Coverdale was almoner, some time afterward, to Queen Catherine Parr, the last wife of Henry VIII., at whose funeral he officiated in the Chapel of Sudeley Castle in Gloucestershire in 1548. On August 14th, 1551, he succeeded Dr. John Harman, otherwise Voysey, in the see of Exeter. On his appointment to this bishopric, Coverdale was so poor as to be unable to pay the first fruits, which therefore the king, at the solicitation of Archbishop Cranmer, excused. On the accession of Queen Mary, and the consequent re-establishment of Catholicism, he was ejected from his see, and thrown into prison, out of which he was released after two years' imprisonment, at the earnest request of the king of Denmark, whose chaplain, Dr. John Machabæus, had married the sister of Coverdale's wife. On his release, which was on the condition of banishing himself, Coverdale repaired to the court of Denmark; he went afterwards to Wesel, thence to Bergzabern, and finally to Geneva, where he joined several other English exiles in producing that version of the English Bible which is usually called 'The Geneva Translation;' part of which, the New Testament, was printed at Geneva in 1557, by Conrad Badius, and again in 1560, in which last year the whole Bible was printed in the same place by Rowland Harte. On the accession of Queen Elizabeth, Coverdale returned from exile; but having imbibed the principles of the Geneva reformers, as far as respected the ecclesiastical habits and ceremonies, he was not allowed to resume his bishopric, nor was any preferment offered to him for a considerable time. In 1563 Bishop Grindal recommended him to the bishopric of Llandaff; but it is supposed that Coverdale's age and infirmities, and the remains of the plague, from which he had just recovered, made him decline so great a charge. In lieu of it, however, the bishop collated him to the rectory of St. Magnus London Bridge. He resigned this living in 1566. The date of his death has been variously stated. The parish register of St. Bartholomew, behind the Royal Exchange, however, proves that he was buried February 19th, 1568, in the chancel of which church a Latin epitaph remained for him, till it was destroyed along with the church in the great fire of 1666. Coverdale was the author of several tracts calculated to promote the doctrines of the Reformation, and of several translations from the writings of the foreign reformers: a list of no fewer than seventeen of these will be found at the end of Coverdale's life in Chalmers's *Biographical Dictionary*, which is our authority for the greater part of the facts here mentioned. (See also Strype's *Lives of Cranmer*, *Parker*, and *Grindal;* his *Memorials* and *Annals;* and Tanner's *Bibliotheca Britannico-Hibernica*.)

The third centenary of the publication of Coverdale's Bible was celebrated by the clergy throughout the churches of England, October 4th, 1835: and several medals were struck upon the occasion.

COVERED-WAY, a road surrounding a fortified post along the side of the ditch which is opposite to the ramparts. It is usually about 30 feet broad, on the level of the natural ground, and is protected by the mass of earth called the glacis. Its situation is indicated by the unshaded space above the line R R in the article BASTION (*fig.* 1). As the works of a fortress form a series of angles which are alternately re-entering and salient, the covered-way necessarily changes its direction at each angle; and the spaces which are there formed by its branches (as at L and above the curve line at E in the article and figure above cited) are respectively designated 're-entering and salient places of arms.'

Under the name of *orlo* the covered-way is met with in the writings of the first Italian engineers, and it is said to have been invented by Tartaglia in the 16th century.

In the defence of a fortress this work is of great importance. A constant fire may be kept up from thence while the trenches of the besiegers are being slowly executed on the surface of the glacis; and in the systems of Vauban and Cormontaingne it is purposely made so narrow as to render the construction of a breaching battery upon it impossible, except by the tedious operation of removing a large part of the glacis.

Without the covered-way, troops making a sortie would, after having crossed the ditch, be scarcely capable of deploying under the fire of the enemy; and, in retreating, if pursued, they might be cut in pieces on the counterscarp before they could descend into the ditch, or gain, by the bridges, the posterns of the fortress; whereas by the sally-ports, or by steps temporarily formed along the interior side of the glacis, the departure from, or the return to, the covered-way is readily accomplished by a large body of troops.

An attack on the covered-way is, moreover, a difficult enterprise, and is usually attended with great loss to the besiegers: the thickness of the glacis renders it impossible to facilitate the assault by forming a breach in it; a grazing fire of musketry from the covered-way disorders the assailants during their approach; and, when arrived at the crest of the glacis, one, and sometimes two rows of palisades form a serious impediment to a descent into the work. Even if an entrance should be gained, the assailants are confined between the traverses and annoyed by the fire of the defenders who have retired behind them, or by a plunging fire from the parapets of the fortress. It is easy to conceive, therefore, that such an attack will scarcely be made unless those fires have been previously in part silenced, and the palisades in the covered-way deranged by a fire of guns or howitzers from the enfilading batteries.

COVERTURE. [Wife.]

COW, one of the most useful of the domestic animals. Her milk is peculiarly adapted to nourish infants and invalids, and requires no preparation to make it palatable or wholesome. In the article Cattle we have given an enumeration of the various breeds of cows; and under Butter and Cheese an account of their principal produce. We shall here confine ourselves to the proper management of a cow, so as to make her most productive; and to the most common diseases to which this animal is subject.

Where only one or two cows are kept, especially where they are to be maintained on a limited portion of pasture, it is of great importance that a good choice be made when they are purchased or reared. Some breeds no doubt are much superior to others; but as a general rule, there is a better chance of having a profitable cow, if she be reared on the land on which she is to be kept. When the common breed of the country is decidedly inferior, it may be profitable to bring a cow from a distance, in which case it should be from some district of which the pasture is rather inferior to that to which she is brought, or at least not better. The best breeds are found in the richest pastures, but they do not thrive on worse. On poor land a small active cow will pick her food and keep in condition, where a fine large cow would starve, or at least fall off rapidly. This is particularly the case in the mountains, near the tops of which no domestic animal will live but the goat, and next to it the smallest breed of cows. Where the pastures are poor but extensive, cows give little milk, and the number which can be kept must make up for the produce of each. Where, on the other hand, cows are stalled, as in Flanders, and fed on artificial food brought to them in sufficient quantity, large bulky cows give the best return for the food; at least this seems to be the opinion of the Flemish farmers in general. In France, where the cows are led along the roads to pick up the herbage growing by the road-side, or are tethered on a small portion of clover or lucern, a small lean cow is preferred; and in general the cows commonly met with, and which are bred in each district, seem the best adapted for the mode in which they are fed. Whatever be the breed or quality of a cow, she should always have plenty of food, without which no considerable produce in milk can be expected. This food should be succulent as well as nourishing, or else fat will be produced instead of milk. A cow well fed may be safely milked till within a month of her calving. It is better that she should be dry before the new milk begins to spring in her udder. A little attention will readily prevent her becoming dry too soon, or being milked too long. Heifers with their first calf should be allowed to go dry sooner than older cows; because their growth would be impeded by the double drain of the milk and the calf. It is best to let a heifer go to the bull when nature prompts her to it, provided she be not less than fifteen or eighteen months old; for if they are thwarted in their first heat, they are apt to become irregular ever after; and it is advantageous for a cow to calve regularly at the same season of the year. The best time is May, when the grass begins to be succulent. In some countries, such as Switzerland, the cows calve regularly in April or May, and are then sent to the pastures among the mountains. The calf is killed almost immediately, unless it be reared for stock, veal being of little value. In populous countries where veal is considered a luxury, the calves are kept and fattened by letting them suck the cows, or by giving them warm milk to drink. Near large towns this is a profitable mode of employing the milk, when it cannot be sold for immediate consumption. [Calf.]

A cottager with two or three acres of moderate land may keep a cow, and thus add much to his earnings as a labourer. For this purpose he will require a small portion of permanent grass fenced off, to allow the cow to take exercise, which is necessary to her health. Her food must be raised in regular succession, and cut for her. The earliest green food is rye; then tares; then clover, which may be made so to succeed each other as to give an ample supply. Cabbages, beet-root, parsnips, potatoes and turnips, will continue the supply during winter; and the dung and urine of the cow carefully collected, will be sufficient to keep the land in condition. This system, lately introduced into some parts of Ireland, has already greatly improved the condition of the industrious poor. There is very good advice on this management in Cobbett's *Cottage Economy*, a useful little publication.

Where cows are allowed to be in the open air, with proper shelter in case of stormy and wet weather, they are subject to few diseases. They must be carefully looked to at the time of calving, but except in urgent cases nature must be allowed to perform her own office. A little common sense and experience will soon teach the possessor of a cow to assist nature, if absolutely necessary; and in case of difficulties the safest way is to call in an experienced person. Drinks and medicines should be avoided; a little warm water, with some barley or bean meal mixed with it, is the most comfortable drink for a cow after calving. The calf, and not the cow, should have the first milk, which nature has intended to purge its intestines of a glutinous substance which is always found in the new-born calf. A very common disease with cows is a disordered function of the liver, producing a yellowish tint in the eyes, and sometimes in the skin. A gentle purge, consisting of half a pound of Glauber salts, an ounce of ginger, and two ounces of treacle, with two quarts of boiling water poured over them, may be given when it is milk-warm, and repeated every other day; keeping the cow warm, if it be in winter, by a cloth over the loins, and in a shed. This will in general restore her health. Should the cow appear to have a chronic affection, the safest course for a cottager is to part with her at any price to those who may be better skilled in curing diseases; for it is seldom that a cow is worth the expense of the farrier's attendance in such cases. The symptoms of a diseased liver or lungs in a cow are leanness, with a staring coat, a husky cough with loss of appetite, a difficulty of breathing, and a great diminution in the secretion of the milk. The first loss by the sale of the cow is always the least in the end. In accidents, or acute diseases, the attendance of a clever veterinary is indispensable.

Nothing is more prejudicial than the idea that medicines are necessary to keep cows in health; and the practice of keeping advertized medicines at hand to give to an animal whenever it is fancied to be ill, is very detrimental to their health. Attention to food and exercise, giving the first regularly and in moderate quantities at a time, and allowing the cow to use her own judgment as to the latter, are the great secrets of health; and a healthy young cow reared at home, or purchased of a conscientious dealer, will probably live to old age without ever having had any disease. A cow is old and unprofitable when she reaches twelve or fourteen years. She should then be sold and a young one purchased. If the cottager have the means of rearing a cow-calf to succeed the old mother, he will do well; if not, he must lay by a portion of the cow's produce every year to raise the difference between the value of the old cow and a young one. The saving banks are admirable institutions for this purpose: a few shillings laid by when the produce of the cow is greatest, will soon amount to the sum required to exchange an old one for a younger.

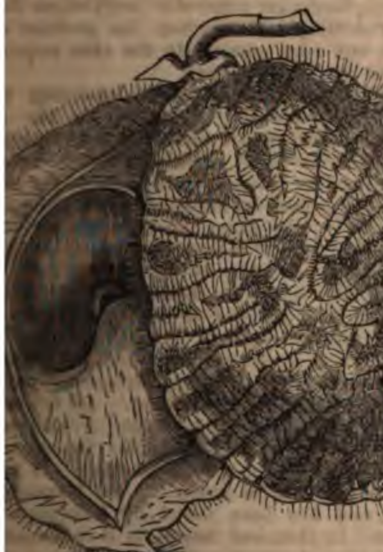
COW-TREE, a plant little known, belonging to the natural order Urticaceæ, and apparently to the genus Brosimum, from which, when wounded, a milky nutritious juice is discharged in such abundance as to render it an important object to the poor natives in whose country it grows. It is described by Humboldt as being peculiar to the Cordilleras of the Coast of Caracas, particularly from Barbula to the lake of Maracaybo, near the village of San Mateo, and in the valley of Caucagua, three days' journey east of Caracas. In these places it bears the name of *Palo de vaca* or *arbol de leche*, and forms a fine tree resembling the star apple of the West Indies. 'Its oblong pointed leaves, rough and alternate, are marked by lateral ribs, prominent at the lower surface and parallel; they are, some of them, ten inches long.' Its flowers and fruit have not been seen by any botanist. From incisions in its trunk flows a glutinous milk, similar in consistence to the first milk yielded by a cow after calving. It has an agreeable balsamic smell, is eaten by the Negroes, who fatten upon it, and has been found by Europeans perfectly innoxious. In chemical characters it is remarkably similar to the milk of animals, throwing down a cheesy matter, and undergoing the same phenomena of putrefaction as gelatine.

oldt supposed the cow-tree to belong to the Sapo- order, but, though little has been added to our know- it since his visit to the Caracas, it is at least certain either a species of Brosimum or very nearly related l consequently a member of the Urticaceous order. tter circumstance renders the cow-tree still more ng; for the milky juice of Urticaceous plants is in ses highly poisonous. But botanists are now ac- with many instances of innocuous plants in s orders; thus the hya-hya tree of Demerara, for belonging to the deadly Apocynaceous family, thick rich milky fluid destitute of acrimony; and ghuna plant of Ceylon is a sort of East Indian t, notwithstanding it belongs to the Asclepiada- der which is acrid and dangerous. In the absence e information as to the circumstances under which trees are milked, it is impossible to say what is the their harmlessness; but every physiologist will see s capable of being explained without difficulty in ys than one.

ES. [Wight, Isle of.]

TCH, or COWAGE, a word of unknown deriva- ess it be a corruption of Al Kooshee, the Bengâli one of the plants that produces it, consists of the nd upon the pods of different species of *Mucuna.* exceedingly slender, brittle, and easily detached, fragments readily stick into the skin and produce able itching; hence they are frequently employed ievous purposes. Cowitch is also used medicinally ifuge, by being mixed with syrup till of the con- of honey, and given in doses of two or three tea-

ants that bear these pods are large twining annuals ials, with leaves like those of kidney beans, dark apilionaceous flowers, with a short standard lying n the wings and keel, and diadelphous stamens, hich have round and half arrow-headed anthers. contain from one to six seeds, and are covered by inkled shrivelled skin, which even stands up in es. Before they are ripe and their hairs hardened, are employed as a vegetable, like kidney beans, escribed as being delicious. The species are found thickets, on the banks of rivers, and about water- n both the East and West Indies, and America e tropics. Mucuna urens and pruriens usually he substance; but that from M. monosperma, the Telingas Enooga doola gunda, or Elephant's ort, is said to exceed the others in the irritating property of its hairs. Dr. Roxburgh states that is was one of the plants formerly used in India to ells; 'it has turned out however not to be the was taken for, and it is more than likely that the ants employed for the same base ends are for- much less dangerous than those who employ them



[Cowitch.]

l of M. monosperma, the Elephant's scratch-wort—natural size.

COWLEY, ABRAHAM, the son of a grocer resident in Fleet Street, London, was born in 1618, and educated at Westminster School, and Trinity College, Cambridge. He was an early poet, and attributes the direction of his genius to the perusal of Spenser, whose works, he says, 'were wont to lye in his mother's parlour;' and with which he made himself familiar before he was twelve years old. At the age of fifteen (not thirteen) he published a volume called 'Poetic Blossoms,' containing, among other things, 'The Tragical History of Pyramus and Thisbe,' written when he was ten years old. At college he increased his reputation by the elegance of his exercises: and not to mention minor works, composed the greater part of his 'Davideis,' an unfinished epic, in four books, on the troubles of David. Being attached to the court party, he was ejected in 1643, after he had taken his degree of M.A.; and he then settled in St. John's College, Oxford, where he became known and esteemed by some leading men, and being appointed secretary to lord Jermyn, afterwards earl of St. Alban's, was employed in the honourable and confidential office of cyphering and decyphering the correspondence of the king and queen. He followed the latter to Paris in 1646, and remained abroad ten years. Returning in 1656, as a sort of spy, 'to take occasion of giving notice of the posture of things in this nation,' he was seized, and obliged to give heavy security for his future behaviour. In the same year he published an edition of his poems, with a preface, in which he seems to have inserted something suppressed in subsequent editions, which was interpreted to denote some relaxation of his loyalty. He also obtained, Wood says, through the influence of the men then in power, the degree of M.D. at Oxford in 1657: having professed the study of physic, in order, it is said, to cloak the real motive of his visit to England. He does not appear ever to have practised, and the only fruit of his studies was a Latin poem upon Plants, in six books. Upon Cromwell's death he returned to France, and resumed his office. At the Restoration he expected to obtain the mastership of the Savoy, which had been promised to him both by Charles I. and II. In this, to his great mortification, he was disappointed; but some amends were made him by a beneficial lease of the queen's lands at Chertsey, in Surrey, whither he retired in 1665, and died in July, 1667, in his 49th year. He was buried near Chaucer and Spenser, in Westminster Abbey, where in 1675 the duke of Buckingham erected a monument to his memory.

Cowley is characterized by Dr. Johnson as 'the last and undoubtedly the best' of the metaphysical authors, a curious class, of whom the biographer, in his Life of Cowley, has given a critical account. 'In his own time he was considered of unrivalled excellence. Clarendon represents him as having taken a flight beyond all that went before him; and Milton is said to have declared that the three greatest English poets were Spenser, Shakspeare, and Cowley.' For a long time he was an object of supreme admiration, and his Pindaric Odes were imitated to weariness by those who could emulate his extravagance, but not his learning, wit, and fertility. This fashion has long been at an end: and while the simpler of our older poets have of late years been increasing in popularity, Cowley, we conceive, is scarcely known to a majority even of the poetical readers of this country. His merits are summed by Johnson in the following passage:—'He brought to his poetic labours a mind replete with learning, and his pages are embellished with all the ornaments which books could supply: he was the first who imparted to English numbers the enthusiasm of the greater ode and the gaiety of the less; he was qualified for sprightly sallies and for lofty flights; he was among those who freed translation from servility, and instead of following his author at a distance, walked by his side; and if he left versification yet improvable, he left likewise from time to time such specimens of excellence as enabled succeeding poets to improve it.' His faults are, negligent and sometimes vulgar diction, rugged and prosaic versification, pedantry, hyperbolical exaggeration, and an abundance, unchecked by judgment, of that particular sort of wit which Johnson defines to be the discovery of occult resemblances in things apparently unlike. His poetry proceeds from the head more than the heart, and dazzles oftener than it touches. This applies especially to his amatory poems: 'Considered as the verses of a lover, no man that has ever loved will much recommend them. They are neither courtly nor pathetic, have neither gallantry nor fondness.' And this is not wonderful, when we are told that he never loved but once, and then wanted resolution to tell his passion. His Miscellanies have gained high praise from the same critic, as containing 'great variety of style and sentiment, from burlesque levity to awful grandeur.' The style of his prose is also highly commended.

COWPARSLEY, a wild umbelliferous plant, called *Chærophyllum temulum.*

COWPARSNEP, a wild umbelliferous plant, called *Heracleum Sphondylium.*

COWPER, WILLIAM, was born at Great Berkhamstead in Hertfordshire, of which place his father, the Rev. John Cowper, was rector, on the 15th of November (old style), 1731. He was first placed, when he was but six years old, at a school kept by Dr. Pitman, at Market Street in Hertfordshire. The cruelty of an elder boy rendered the two years which he spent here two years of misery. He was next placed in the house of an oculist, apprehensions being then entertained that he would lose his sight; and under the care of this oculist two more years of his boyhood were passed. At the age of ten he was sent to Westminster School, where he stayed till he was eighteen; applying during these eight years with diligence to his studies, and entering with spirit into boyish sports.

After leaving Westminster, Cowper was articled for three years to a solicitor; in whose office he had for a fellow-clerk the future Lord Thurlow. When the three years for which he was articled, during which however he gained no great stock of legal knowledge, expired, he took up his abode in chambers in the Middle Temple. In 1754 he was called to the bar; and in 1759 he was appointed a commissioner of bankrupts. One reason, and doubtless a principal reason, why the law had been fixed upon as Cowper's profession, was the existence of a certain amount of legal patronage in the hands of some of his relations. It was not certainly from any enthusiasm for the law evinced by Cowper; though it has not been made out that his profession had been determined upon by his friends in the teeth of convincing proof that he was unfit for it. Having however a small patrimony, and looking forward to the exercise in his favour of the family influence which has been mentioned, he cared not for that to which application would lead, any more than he liked the subject to which he was to apply; and accordingly he neglected the study of law. While residing in the Temple, he made love to his cousin, Theodora Cowper, the sister of his correspondent, Lady Hesketh, and dallied with literature. He was a member of a club called the 'Nonsense Club,' consisting entirely of Westminster men, among whom were Bonnell Thornton, Colman, and Lloyd; and he contributed a few papers to the 'Connoisseur,' of which Thornton and Colman were the joint projectors and writers.

His residence in the Temple extended through eleven years. In 1763, the last year of that residence, the offices of clerk of the journals, reading clerk, and clerk of the committees in the House of Lords, all which offices were at the disposal of a cousin of Cowper's, became vacant about the same time. The last two were conferred on Cowper. His patrimony was by this time well nigh spent, and the gift was therefore so far acceptable. But the duties attached to the offices of reading clerk and clerk of the committees were duties which required that he should frequently appear before the House of Lords; and to him, who suffered from extreme nervousness, a public exhibition of any kind was, as he himself expresses it, 'mortal poison.' He therefore, almost immediately after having accepted them, resigned these offices; and took that of clerk of the journals. But here again, his cousin's right of nomination having been questioned, Cowper was unexpectedly required to submit himself to an examination at the bar of the house, before being allowed to take the office. Thus the evil from which he seemed to have escaped again met him. 'A thunderbolt,' he writes in his memoir of himself, 'would have been as welcome to me as this intelligence....To require my attendance at the bar of the House, that I might there publicly entitle myself to the office, was in effect to exclude me from it. In the mean time, the interest of my friend, the honour of his choice, my own reputation, and circumstances, all urged me forward; all pressed me to undertake that which I saw to be impracticable.' Unceasing was the anguish which he now suffered. He even looked forward anxiously to the coming of insanity, a constitutional tendency to which had manifested itself some years before, that he might have a reason for throwing up the office; and when the dreaded day drew near, and he found himself still in possession of his senses, he determined on the commission of suicide. His many attempts to destroy himself all failed of success, owing, as he is pleased to explain it in his memoir, to direct interpositions of Providence. The office was ultimately resigned on the very day appointed for the examination; and shortly afterwards he became insane. He was immediately placed under the care of Dr. Cotton at St. Alban's, with whom he stayed until his recovery, which took place about eighteen months after, in June, 1765.

The form which Cowper's madness assumed was that of religious madness. A belief that he had been irrevocably cut off from a state of grace in this world, and of salvation in the next, was that which preyed upon his mind previous to the coming of the shock, and was predominant while it lasted. In the three subsequent periods of his life during which madness returned to him, from 1773 to 1776, for about six months in 1787, and during the six years preceding his death, its form was the same.

On Cowper's recovery in 1765, he took up his residence in Huntingdon, solely that he might be within reach of a younger brother who was then at Cambridge. Here he became acquainted with the family of Mr. Unwin, the beneficial influence exercised by whom on Cowper's subsequent life is well known. Finding that his spirits were sinking in the solitude in which he lived, and also that his scanty means were not sufficient to maintain a separate establishment, he became a boarder in Mr. Unwin's house. On Mr. Unwin's death in 1767, Cowper and Mrs. Unwin removed to Olney in Buckinghamshire, attracted thither by their esteem for Mr. Newton, who was then curate of the place. Mr. Newton, a man greatly to be respected for moral worth, was of that religious class which is commonly called evangelical; and Cowper now entered upon what is styled by a biographer belonging to the same class of pietists 'a course of decided Christian happiness, substituting frequent evangelical worship for the daily form of prayer with which he had hitherto contented himself, and enjoying the advantages of a more extended religious intercourse.' It is probable that Cowper, with his constitutional nervousness and predisposition to mental derangement, did not derive unmixed good from the excitement of frequent prayer-meetings and an unremitting attention to religious subjects. Mr. Newton had formed a plan of publishing a volume of hymns, and prevailed on Cowper to assist in composing them. They were afterwards published in 1776, under the title of Olney Hymns; but Cowper, before he had proceeded far in their composition, was visited with his second attack of madness, which lasted nearly four years.

In 1776, after Cowper's recovery, Mr. Newton removed from Olney. By Mrs. Unwin's advice he was now induced to commence a poem, taking, upon her suggestion, the Progress of Error for his subject; and he immediately went on to write three more moral satires, intitled 'Truth,' 'Table Talk,' and 'Expostulation.' These, together with the poems intitled 'Error,' 'Hope,' 'Charity,' 'Conversation,' and 'Retirement,' and some smaller pieces, were formed into a volume, which was published in 1782. He published a second volume in 1785, containing the 'Task' and 'Tirocinium,' the former of which poems had been commenced on the suggestion of another female friend, Lady Austen. It is to the same lady that we are indebted for the 'History of John Gilpin.' He had begun in 1784, so soon as the 'Task' and 'Tirocinium' had been written, his translation of Homer, which occupied him for the next six years. The translation was published in 1791. During its progress he had changed his place of residence from Olney to the neighbouring village of Weston, on the recommendation of his cousin, Lady Hesketh, with whom he had recently renewed a correspondence which had been long suspended, and whose attentions contributed much to the comfort of his later years. Almost immediately after the translation of Homer was completed, he undertook to superintend a new edition of Milton's Works, and to furnish translations of the Latin and Italian poems. In 1792 he paid a visit to Hayley at Eartham, in Sussex, not having made a journey for twenty years before. Symptoms of his constitutional malady had occasionally shown themselves during the eight or ten preceding years; and in the beginning of 1794 he was again afflicted with madness. A change of scene being judged desirable, he was removed rst to North Tuddenham in Norfolk, thence to Munds- y, and afterwards to East Dereham; and he succeeded in taining short intervals of comparative tranquillity, during hich he composed one or two small pieces and revised his anslation of Homer. Mrs. Unwin, his faithful companion, ed on the 17th of December, 1796; and after three dreary ars, Cowper followed her to the grave on the 25th of pril, 1800. He died in his 69th year.

Cowper's merits have been summed up by Mr. Southey the words—'the most popular poet of his generation, d the best of English letter-writers.' His letters are ritten in a genuine unaffected English style, and are arked for the most part by a playfulness and humour aich effectually prevent the weary feeling that usually tends a long continuous reading of epistolary correspond- ce. Absence of affectation is again a chief charac- ristic of his poems. They are free from all sickly senti- entality or mannerism in language. As regards freedom om the first, the manliness of the poet presents a riking contrast to the feminine character of the man; aile, with reference to the second point, Cowper has the erit of having done much towards that improvement in etic diction which has since received a mighty impulse rough the poems of Mr. Wordsworth. He was an en- usiastic lover of nature; and some of his descriptions of tural objects are such as Wordsworth himself might be oud to own. His poems contain also, as it is not too ongly expressed by Hazlitt, 'a number of pictures of mestic comfort and social refinement which can hardly forgotten but with the language itself.' (*Lectures on e English Poets*, p. 182.) There is a striking amount of riety in his poems, or, taking but one of them, in the 'ask' alone. Some of his smaller pieces, as for instance e Lines on receiving his Mother's Portrait, and those dressed 'to Mary,' are exquisitely pathetic.

It is necessary to say a few words concerning his trans- ion of Homer. Its execution is unequal, as might be pected in the case of a work of such length, and of an thor subject to attacks of melancholy as Cowper was. it taken as a whole, and judged by those rules which ould be applied to translations, it must be pronounced e best translation of Homer which we possess. He set t with a determination to seize, so far as he could, the d spirit of Homer; whereas Pope, who, it is well known, nslated not from inclination, but for money, had thought any thing else; and having adopted blank verse, he had make no sacrifices of meaning or language to the tyranny rhyme. From Cowper too, a man gifted with a decidedly etical temperament, a more genial appreciation of Homer s to be expected than from one whose merits chiefly nsist in powers of wit which are certainly great, and in facility of rhyming which is certainly extraordinary. wper himself said of his predecessor—'There is hardly e thing in the world of which Pope was so destitute as a te for Homer.'

There are numerous Lives of Cowper. It is unne- ssary, since all that is peculiar in the views taken by pre- ding biographers is either embodied or discussed in these o, to mention more than those by Mr. Grimshawe and r. Southey. Each of these Lives is prefixed to a Col- ction of Cowper's Letters and Poems. Mr. Grimshawe nounces that he presents a 'complete edition of the 'orks of Cowper, which it is not in the power of any indi- dual besides himself to accomplish, because all others are barred access to the "Private Correspondence."' The *Private* Correspondence,' it appears, is a collection of owper's Letters, which was *published* in 1824 by Dr. J. hnson, and the copyright of which is in the hands of Ir. Grimshawe's publishers. Though Mr. Southey is thus barred from inserting the whole of this collection in his lition, he has embodied in the Life all that is material erein; while, by the kindness of many of the surviving latives of Cowper's friends, he has obtained access to uch of his correspondence that had never seen the light. le has also been enabled, through the same sources, to hed new light on many incidents of Cowper's life; for in- stance, his connexion with the ignorant enthusiast Teedon ol. iii., chap. 16, 17,), and the breach with Lady Austen, hich preceding biographers have invented many gossiping tories to explain, and which, by showing that Cowper gra- ually got tired of her society, he has divested of its former ysterious importance. A poem entitled 'Anti Thelyph- ora,' being a satire against those who would do away with the institution of marriage, appears among Cowper's poems for the first time in Mr. Southey's edition.

COW-POX. [Vaccina.]

COWRY SHELLS are called by conchologists *Cypræa*. Their beauty has procured them a place among the ornaments of our chimney-pieces, and they have been in demand among civilized and uncivilized nations time out of memory. Like the precious metals, they are not only used for ornament, but they have also the qualities necessary to constitute them a species of currency. In fact, cowries are used as small coin in many parts of Southern Asia, as in India, the Burmese empire, Siam, &c., and especially on the coast of Guinea in Africa. Their great multiplication in these countries has however depressed their value much below that of the precious metals. In 1740 a rupee in Bengal was worth 2400 cowries; in 1766, 2560 cowries; and now, we believe, 3200 may be had for it.

The shells used as currency occur principally in the Philippine Islands, and on the coast of Congo, but particularly among the Maldive Islands, of which they constitute the principal article of export. They are fished for three days after the high tides, by the women, with baskets, in which they take up a quantity of sand containing cowries. When the sand is washed out, the shells are heaped up on the shores, and the fish soon die; they are then ready for the market. (Sonnerat, Beckmann.) [Cypræidæ.]

COXE, WILLIAM, archdeacon of Wilts, was born in London, March, 1747. In 1768 he was a fellow of King's College, Cambridge. In 1771 he was appointed to the curacy of Denham, near Uxbridge, but soon after he went to travel on the continent as tutor to the marquis of Blandford, son of the duke of Marlborough, with whom he remained two years. In 1775 he accompanied in the same capacity lord Herbert, son of the earl of Pembroke, with whom he visited a considerable part of Europe. His 'Sketches of the Natural, Civil, and Political State of Switzerland, in a series of Letters to W. Melmoth,' 8vo. 1779, was translated into French with considerable additions by M. Ramond, a French traveller of taste and information, who rendered Coxe's work, which was rather dry and prosy, more attractive by adding many entertaining details. Coxe's attention had been chiefly directed to the political institutions of the numerous republics of the old Helvetic Confederation, a subject which had been already in some measure treated by Stanyan half a century before. Ramond travelled as a pedestrian through the most remote Alpine districts: he understood the dialects of the country, and in this respect had a great advantage over Coxe. He added to Coxe's work several entire letters, among others one in which he describes the striking scene, which few travellers have witnessed, of a general landsgemeinde, or assembly of the whole sovereign people of the canton of Glarus. Ramond's book is still one of the most interesting works upon old Switzerland, such as it was before the French invasion and subsequent changes. (*Lettres de Mr. W. Coxe sur l'Etat Politique, Civil, et Naturel, de la Suisse, augmentées des Observations faites dans le même Pays par le Traducteur,'* 2 vols. 8vo., Paris, 1781.) In 1789 Coxe published a second edition, much enlarged, of his own work, under the title of 'Travels in Switzerland,' 3 vols. 8vo. The third volume is entirely engrossed by a description of the Grisons. Meantime in 1784, having visited the northern kingdoms of Europe, he published 'Travels into Poland, Russia, Sweden, and Denmark,' in 5 vols. 8vo., which were translated into French. Soon after the publication of this work he accompanied Mr. Samuel Whitbread on a tour on the continent, and in 1786 he went there again with the son of Mr. Portman, of Bryanston, Dorset. In 1788 he was presented to the rectory of Bemerton by the earl of Pembroke. In 1794 he again visited the continent with lord Brome, eldest son of the marquis Cornwallis; and on his return was made chaplain of the Tower.

Coxe had collected a considerable store of information during his travels, of which he availed himself in writing several historical works, the most important of which is the 'History of the House of Austria from the foundation of the Monarchy by Rudolf of Habsburg to the death of Leopold II. in 1792,' 3 vols. 4to., London, 1807. It is a work of considerable labour and research, and conscientiously written. The author quotes in his preface and in the body of the work, his authorities both printed and MS;

he also availed himself of oral information which he collected in his travels. 'I have endeavoured,' he says in his preface, 'to divest myself of party and local prejudices; I have weighed every evidence with candour and impartiality, and have given the result of a laborious investigation by presenting a faithful and consistent picture of times, characters, and events, without trespassing on the patience of the reader by disquisitions on the innumerable contradictions and clashing testimonies which impeded my progress at every step.'

The author has confined himself to the German branch of the house of Austria, leaving out the Spanish branch from Philip II. The work was translated into German, and seems to have been well received at Vienna. Coxe also wrote—1. 'History of the Kings of Spain of the House of Bourbon, from 1700 to 1788,' 3 vols. 4to., 1813. 2. 'Memoirs of John Duke of Marlborough, with his Original Correspondence,' 3 vols. 4to., 1817—19;' an elaborate and valuable work. 3. 'Memoirs of Sir Robert Walpole, Earl of Orford, illustrated with Original Correspondence and Authentic Papers,' 3 vols. 4to., 1798. 4. 'Account of the Russian Discoveries between Asia and America; to which are added, the Conquest of Siberia, and the History of the Transactions and Commerce between Russia and China,' in 4to. Gmelin, Pallas, Müller, and others had already treated these subjects, but Coxe has added more complete information which he collected at Petersburg. 5. 'Private and Original Correspondence of Charles Talbot, Duke of Shrewsbury, with King William III., the Leaders of the Whig Party, and Others.' 6. 'An Historical Tour in Monmouthshire, illustrated with plates from the drawings of Sir R. C. Hoare,' 2 vols. 4to. 7. 'An Account of the Prisons and Hospitals in Russia, Sweden, and Denmark, with Remarks on the Different Modes of Punishment in those Countries,' 8vo. 8. 'Literary Life and Select Works of Benjamin Stillingfleet,' 3 vols. 8vo.; besides several minor works.

In 1803 he married Eleanora, daughter of Walter Shairp, consul-general of Russia. In 1805 he was appointed archdeacon of Wilts. After publishing the 'Memoirs of Marlborough,' in 1819 his sight failed him, and he became gradually blind. He died at Bemerton at an advanced age, in June, 1828. Coxe occupies a respectable place among modern historians: the subjects that he has treated are numerous and important; and he spared no pains to collect the best information, for obtaining which he had facilities of access to some important private collections. The following work was published after his death: 'Memoirs of the Administration of the Right Honourable Henry Pelham, collected from the Family Papers,' 2 vols. 4to., London, 1829.

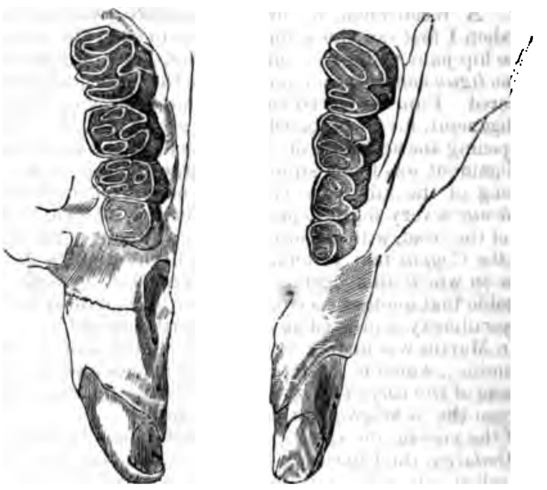
COYPEL, the name of a family of painters. Noel, the first of the family who attained any reputation, was the son of Guyon Coypel, a younger son of a Norman family, and was born in 1628. Guyon practised painting, but apparently with little success. He placed his son at an early age with Vouet, a painter at Orleans, and afterwards under a painter named Quillerier. Noel rose rapidly in reputation, and was received into the Academy at Paris in 1663. He was appointed by the king director of the Academy at Rome, where he resided some time, enjoying the acquaintance of Bernini, Carlo Maratti, and other eminent painters of the day. Noel Coypel was a diligent student, and the French Academy in Rome profited greatly by his assiduous example. Having returned to Paris, he was successively made rector and director of the Academy. He died in 1707, working at his art to the last. Noel was married twice, and left two sons, Antoine and Noel Nicholas, and many daughters. Antoine, his father's pupil, was born in 1661, and accompanied his father to Rome, where he studied the works of the old masters. He afterwards travelled for improvement into Lombardy. He left Rome at too early an age to profit as he might have done by his studies from the Italians, being then no more than eighteen years of age. He made such progress in his profession, that at the age of twenty he was received into the Academy. In 1707 he was made professor and rector, and in 1714 director. He was married, and at his death in 1722 left one son, Charles, also a painter, and his father's pupil, who successively passed all the ranks to the highest in the Academy. Noel Nicholas, the second son and pupil of Noel, was born in 1692. He was received into the Academy in 1720, during his brother's rectorate. He did not attract much notice until after his brother's death, but then rose rapidly in reputation till the time of his own death, in 1673.

Noel Coypel is skilful and spirited in design, and a lively colourist, but somewhat affected. Antoine, the most famous of the family, has much power and variety in his design; but the mannered style of the French school was not corrected by his study of the Italian, since he was too ready to adopt the artificial graces of Bernini, his friend and adviser. Noel Nicholas, although not free from the factitious elegance of his relatives, possesses a considerable feeling for pastoral enjoyment, which is evinced in some rustic compositions. The principal works of all the Coypels are at Paris. (Argenville.)

COYPOU, or **COYPU**, Molina's name for a rodent quadruped, the *Quoiya* of D'Azara, the *Coui*, *Mus Coypus* of Molina and Gmelin, *Hydromys Coypus* of Geoffroy, *Myopotamus Bonariensis* of Commerson. Lesson alters the name to *Potamys*, but *Myopotamus* is the term usually current among zoologists.

Generic Character.—Head large; muzzle obtuse; ears small and round. *Feet* five-toed; thumb of the fore-feet very short, the four fingers free; posterior feet palmated. *Tail* long, conical, strong, scaly, and sprinkled with scattered hairs.

Dental formula. Incisors, $\frac{2}{2}$. Molars, $\frac{4-4}{4-4}=20$. The molars gradually increase in size from the first to the last, and approximate to those of the beavers.



[Teeth of Coypu, rather less than natural size, from F. Cuvier.]

Mr. Martin, in the 'Proceedings of the Zoological Society' (1835), has given an interesting account of the anatomy of an individual that lived and died in the gardens of the Society. The skull, although it agreed in many points with that of *Capromys*, approximated nearest to that of the *Capybara*. 'The main outline and contour of both are very similar; they both agree in the flatness of their upper surface, in the elongation of their form, in the magnitude of the suborbital *foramen*, and in the development of the processes of the occipital bone, continued from its transverse crest. When, however, we descend to details, numerous and striking points of difference are immediately observable. In the *Capybara*, for instance, the margin of the orbit is circular or nearly so, and the zygomatic arch, broad and strong, has its lower edge brought down considerably below the level of the molars, though it advances much farther than either in the *beaver* or *water-rat*; in which animals the orbits, of an oval shape, have a less lateral and more vertical aspect. In the *Coypus* the temporal *fossæ* are deeper than in the *Capybara* or the *beaver*, and the external auditory *foramen* runs obliquely forwards and downwards, while in the *Capybara* it runs obliquely downwards and inwards, and in the *beaver* downwards and backwards. The frontal bone is divided by a permanent longitudinal suture, as it is also in *Capromys*; whereas in the *Capybara*, the *water-rat*, and the *beaver*, no trace, at least in adults, of such a separation is visible. The *beaver*, when semi-adult, exhibits, however, a slight appearance of it.' The number of the vertebræ, according to the same author, is as follows:—Cervical, 7; dorsal, 13; lumbar, 6; sacral, 4; caudal, 23. The ribs are short, thin, and flexible, and the capacity of the chest is small. The dentition, he observes, differs widely from that of *Hydromys*, with which the animal was associated generically by M. Geoffroy St. Hilaire. Baron Cuvier, he remarks, states that the skull of the *Coypus* has a resemblance to that of *Hystrix dorsata*, but he adds that he has not seen the skull of that animal, and therefore cannot judge; though certainly the teeth, as given by M. F. Cuvier, and those of the *Coypus* differ materially. 'The *incisores* are large and strong, and of a deep orange yellow on their outer surface; the alveoli of those of the upper jaw pass through the intermaxillary into the true maxillary bones. In the lower jaw they extend beneath the whole of the molares.' The *scapula*, it appears, agrees closely with that of *Capromys*, but differs considerably in shape from that of the *beaver*. Its anterior edge runs out into an angle, at a greater comparative distance from the spinous ridge than either in the *beaver* or the *porcupine*, and the same may be said of the posterior angle; so that the total breadth of this bone is comparatively greater than it is in those two animals. The *clavicle* is slender. The *humerus* presented nothing extraordinary. The *pelvis* was long and narrow. The *femur* was thin and small, and had both a *trochanter major* and a *trochanter minor*.

But the following would seem to be the most remarkable part of the osseous structure of the Coypou.

'In the motions of the hinder limbs of the *Coypus* when alive,' says Mr. Martin, 'I observed not only an awkwardness but a want of firmness, which gave something of a crawling character to the progression of the animal on the floor. A recollection of this circumstance, which struck me when I first saw the animal, led me to open the capsule of the hip-joint with care: on doing this, I was surprised to see no *ligamentum teres*; on opening the other, still none appeared. I am convinced that I did not destroy or rupture the ligament, for no ruptured fibres were at all visible; and on opening the *acetabula* of other animals at the same time, the ligament was found strong and large; in this, however, nothing of the kind was visible. There is on the head of the *femur* a very slight depression, but it is covered, as the rest of the head, with smooth cartilage. I believe therefore that the *Coypus* may be added to the list of the few *Mammalia* in which this ligament is absent; but it would be desirable that another specimen should be examined before this peculiarity is insisted on as an ascertained fact.'

Mr. Martin was unable to examine all the bones of the extremities, which he regrets, as Cuvier notices a peculiarity in those of the *carpus*; viz., in there being no separation between the *os magnum* and *trapezoides*.

Of the viscera, the spleen presented the same figure as in the *Ondatra*, the *Capromys*, and some other rodents. The stomach closely resembled that of *Capromys*. The *duodenum* commenced with a large *sacculus* projecting towards the *œsophagus* like a *cœcum*, in which respect it resembles *cœlogenus* as described by Sir E. Home. A similar dilatation, Mr. Martin remarks, has been noticed in *Capromys*, *Anœma*, and *Dasyprocta*, but not so considerable. There were several other resemblances to *Capromys*, in the intestines, in some of the abdominal muscles, and in the urethra; but we must refer the reader for the details to the paper itself, which is of considerable length, and well worth perusal.

Description.—Less than the beaver, which however it resembles in many points. *Head* large and depressed; ears small and rounded; muzzle sharper than that of the beaver, with very long and stiff whiskers. *Neck* stout and short. *Limbs* short; fore-feet not webbed, fingers on each five, the thumb very small: hind-feet with the same number of toes, the great-toe and three next joined by a web which extends to their ends, little-toe free, edged with a membrane on the inner side; nails compressed, long, crooked, and sharp. *Tail* round and thinly hairy, the hairs permitting the scaly texture of the skin to be seen. *Back* brownish-red, becoming redder on the flanks. *Belly* of a dirty red. Edges of the *lips* and extremity of the *muzzle* whitish.

Geographical Distribution.—South America. Very common in Chile, Buenos Ayres, and Tucuman: more rare in Paraguay.

Habits, much resembling those of the generality of aquatic rodents. It swims with great ease, affects the neighbourhood of water, and burrows in the ground. Its principal food in a state of nature is vegetable. The female brings forth from five to seven, and the young always accompany her till they are well grown.

The French authors say that the coypou is easily domesticated, and that its manners in captivity are very mild. The individual kept in the garden of the Zoological Society in the Regent's Park did not show much sociability of disposition, but it was confined in a cage of no large dimensions, and there was not much opportunity for making it familiar.

[Myopotamus Coypus.]

Utility to man.—The coypou, like the beaver, has two kinds of fur. The long ruddy hair gives the tone of colour, and the brownish ash-coloured fur at its base is, like the down or wool of the beaver, the cause of the animal's commercial value, and used largely in the manufacture of hats. In France the skins were, and perhaps still are, sold under the name of Racoonda. M. Geoffroy mentions that, in certain years, a single French furrier, M. Bechem, has received from 15,000 to 20,000 skins. They are imported into Great Britain to a large amount—from 600,000 to 800,000 have been stated as the importation of one year, principally from the Rio de la Plata—under the name of Neutria or Nutria skins, an appellation probably derived from some supposed similarity in the appearance and habits of the animal which produces it to the otter, the Spanish name of which is Nutria.

CRAB (Zoology), *Cancer*, Leach; *Platycarcinus*, Latreille, Edwards. Dr. Leach restricted the genus *Cancer* to the form of *Cancer pagurus*, Linn., the large eatable crab of our coasts, which was, when he defined the genus, the only species known.

Generic character. External antennæ with the basilar joint broad, very long and thick, filling the hiatus between the inner *canthus* of the orbit and the front, and terminating forwards in a strong, angular, tooth-like projection, directed forwards and a little inwards, reaching beyond the frontal line. The terminal or moveable portion is slender, very short, and arises from the internal part of the basilar joint, nearer to the cell of the internal *antennæ* than to the orbit. The internal antennæ, instead of lying obliquely outwards or transversely, as in most other genera of this section, are directed forwards; a character by which *Cancer* may at once be distinguished from *Platypodia*, *Carpilius*, *Xantho*, &c. The second joint of the inner footstalk of the external pedipalps is excavated at the anterior part of the inner margin; in some species the notch is confined to the angle, in others it extends half way down the side of the joint. The first pair of feet is nearly equal; in some specimens of each species, the difference in size being scarcely appreciable. They are, generally, very robust. The remaining feet have no spines, but are in most species more or less hairy. The abdomen of the male has five, that of the female seven joints. (T. Bell.)

Geographical Distribution. With the exception of our indigenous species, *Cancer pagurus*, they are all, as far as their localities are known, exclusively natives of the coasts of the hotter parts of America. (T. Bell.)

Mr. Bell in his interesting paper on the genus *Cancer*, (Zool. Trans. i. 335.) gives three new species, viz. *Cancer longipes*, *Cancer Edwardsii* and *Cancer dentatus* brought home by Mr. Cuming and Mr. Miller, besides *Cancer irroratus* of Say, and *Cancer pagurus,* which last, as it was considered the type by Dr. Leach, we select as an example.

Carapace transversely oblong, flattened, but little higher in the middle than at the sides, somewhat rounded before and behind; the surface minutely granulated, smooth, with the regions but slightly marked. Latero-anterior margin slightly recurved, divided into ten quadrate lobes, the sides of which are contiguous, and the margins entire; the last lobe inconspicuous, and passing into the posterior marginal line, which terminates immediately anterior to the posterior transverse ridge. Front trifid, the teeth of nearly equal length and size. Orbits round, with a strong triangular tooth over the inner *canthus,* which does not project so far as the front; and a smaller one filling the space between the two superior fissures. External *antennæ* with the basilar joint much elongated, and terminating forwards in an obtuse tooth; the first joint of the moveable portion club-shaped, the second cylindrical, the remaining portion setaceous. Internal *antennæ* directed forwards, the anterior half doubled directly backwards in a state of rest. The basilar joint broad, cup-shaped, its outer edge projecting forwards; the second joint (the first of the moveable portion) cylindrical, the penultimate with a small, hooked, and recurved process at the *apex.* Pedipalps as in the rest of the genus. *Sternum* minutely punctated, and furnished with small patches or lines of short scanty hair. *Abdomen* in the male with the margin fringed with short hair; the last joint forming an equilateral triangle. Anterior feet, large, robust, smooth, without spines or tubercles, minutely granulated, the hand rounded, without crest, the inner surface exhibiting only the rudiments of the five lines of *puncta,* so conspicuous in other species of the genus. The remaining feet furnished with numerous *fasciculi* of stiff hairs, the last joint in all furrowed, and terminated by a short strong nail. Colour above, reddish brown, the legs more red, the claws deep shining black; beneath whitish. *Locality.* Coasts of Great Britain, &c. and of western Europe. (T. Bell.)

Pennant states that this species inhabits rocky coasts, and is the most delicious meat of any, and that it casts its shell between Christmas and Easter. 'There are some species,' says Mr. H. Milne Edwards, in his article *Crustacea* (Cyclopædia of Anatomy and Physiology) 'such as the crabs and the Brachyura generally, in which the carapace presents a considerable expansion on either side, forming two large compartments, in which the greater mass of the thoracic viscera is contained. Under these circumstances, it would be impossible for the animal to escape from its dorsal covering by the relatively inconsiderable opening which this part presents on its inferior aspect. This renders it necessary that the carapace, instead of being cast off by simply rising in a single piece, should give way and separate in some direction or another, and this it does by splitting along the curved lines, extending on either side from the mouth to the origin of the abdomen, in the course of which the epimeral pieces cohere with the dorsal one.' (Collinson, Phil. Trans. 1746 and 1751; Hist. Nat. des Crustacés, t. 1. p. 56.) Mr. Lyell says (Principles of Geology, vol. 3.) 'A large female crab (*Cancer Pagurus*) covered with oysters, and bearing also *Anomia Ephippium* and *Actiniæ,* was taken in April 1832, off the English coast. The oysters include individuals of six years' growth, and the two largest are four inches long and three inches and a half broad. Both the crab and the oysters were seen alive by Mr. Robert Brown. This specimen is in the collection of my friend Mr. Broderip, who observes that this crab, which was apparently in perfect health, could not have cast her shell for six years, whereas some naturalists have stated that the species moults annually, without limiting the moulting period to the early stages of growth of the animal.'

The term *Crab* is in common parlance applied to the great bulk of the Brachyurous crustaceans. The different genera will be found under their appropriate titles, CORYSTES, HERMIT-CRAB, GECARCINUS (Land-crab), &c. &c. for example.

For the blood-spotted crab of the Asiatic seas, *Cancer maculatus,* Linn. &c. and the coralline crab, *Cancer corallinus,* Fabr. Dr. Leach instituted the genus *Carpilius,* characterized by the existence of a single tooth on the border of the carapace, and by the tridentated front; and, for the eleven-toothed crab, *Cancer undecimdentatus,* Fabr, the carapace of which is smooth, with eleven crenelated teeth on each antero-lateral border, and black toothed fingers, spoon-shaped at the end, he founded the genus *Clorodius* or *Chlorodius.* Mr. Milne Edwards enumerates four species of *Carpilius* and seven of *Chlorodius.* He considers the fossil *Crabe aux grosses pinces, Cancer macrochelus,* Desm. (Hist. Nat. des Crustacés Fossiles, p. 91. pl. vii. fig. 1—2), *Cancer Lapidescens,* Rumph. (Amb. Rariteit Kamer, pl. 60. f. 3.) as referable to the genus *Carpilius* rather than to the division of crabs properly so called. It should be remembered that Mr. Milne Edwards's genus *Cancer* (*crabe*) differs from that of Dr. Leach. The former includes under that name such forms as *Cancer roseus* (*Carpilius roseus* of Rüppell) *Cancer lobatus, Cancer esculptus, Cancer limbatus* (*Xantho granulosus,* Rüp.) *Cancer Savignii* and *Cancer Acanthus,* excluding Dr. Leach's *Cancer,* the type of which is the eatable crab of our coasts, to which form Mr. Milne Edwards gives the name *Platycarcinus.* For the reasons assigned by Mr. T. Bell, we retain Dr. Leach's arrangement. It does not appear that any species of *Cancer,* Leach, *Platycarcinus,* Milne Edwards, has been found in a fossil state.

CRABBE, GEORGE, was born at Aldborough, in Suffolk, on the 24th of December, 1754. His parents were in an humble condition of life, the father being a warehouse-keeper, and collector of the salt-duties, or saltmaster, at Aldborough. The future poet showed, at a very early age, a taste for reading, and a delight in aught that bore the shape of poetry; and his father was thus led to give him an education better than he could well afford. It was determined that he should follow the profession of a surgeon; and having made some progress in mathematics at school, and also, as his son expresses it, 'laid the foundations of a fair classical education,' he was in his fourteenth year apprenticed to a surgeon at Wickham Brook near Bury St. Edmunds. He stayed with this surgeon three years, and, not having been well treated, was, in 1771, transferred to another at Woodbridge in Suffolk, with whom he finished his apprenticeship. His father had been in the habit of taking in a periodical, called Martin's Philosophical Magazine, the last sheet of which was always devoted to 'occasional poetry;' and when, at the end of the year, he sent the magazines to be bound, these sheets of poetry were contumeliously cut out, and became the property of George. He read them over and over again, and when yet very young tried to write pieces of poetry himself. Neither school nor surgery deprived him of the taste formed thus early. While at Wickham Brook he filled a drawer with verses, and at Woodbridge, having written a poem on Hope for a prize offered in Wheble's Lady's Magazine, and having been successful, he was induced to go on contributing to the publication in which he had gained his first laurels, and before his return home published in a separate form, but anonymously, a poem entitled 'Inebriety.'

He returned home at the close of 1775, and had now for a time to submit to the drudgery of the warehouse, until his father could afford to send him to London in order to complete his medical education. When at last he went, it was with means too scanty to allow of his gaining any real advantage; and he returned before a year had expired, but not till his resources, though carefully husbanded, had been exhausted. Shortly after, he was encouraged by his friends to set up as a surgeon and apothecary. He had never, it appears, liked his profession, though, impelled by a sense of duty, he had made more than one effort to apply himself to it with diligence. His preparation for the duties which he was now liable to be called upon to perform had been inadequate; and added therefore to dislike of these duties was uneasiness under the responsibility which attached to him. He was in love, and the object of his attachment was (we quote his son's words) 'too prudent to marry, where there seemed to be no chance of a competent livelihood; and he, instead of being in a position to maintain a family, could hardly, by labour which he abhorred, earn daily bread for himself. He was proud too; and, though conscious that he had not deserved success in his profession, he was also conscious of possessing no ordinary abilities, and brooded with deep mortification on his failure.' After a short struggle with himself, he resolved to abandon his profession, and proceed to London as a literary adventurer. Being without money, he wrote to Mr. Dudley North, whose brother, Mr. Charles Long, had been a candidate for Aldborough, requesting the loan of five pounds. 'A very extraordinary letter it was,' said Mr. North some years afterwards to Crabbe, when they met on terms of equality; 'I did not hesitate for a moment.' Thus provided with money he embarked on board a sloop at Aldborough, and, working his way, arrived in London in April, 1780.

He took lodgings near the Exchange, and set about authorship with vigour. He projected the publication of a prose work, entitled 'A Plan for the Examination of our Moral and Religious Opinions;' but thought it expedient, before publishing this, to make himself known by a poem. Two poems, prepared with this view, were rejected by the booksellers to whom they were offered. He now published, on his own account, a poem entitled 'The Candidate;' but, almost immediately after it appeared, the publisher failed, and all hopes of profit from this attempt were thus taken away. His stock of money meanwhile had gradually disappeared, and he was reduced to great distress. He had been advised at Aldborough to apply for assistance to Lord North: he did so, and received none. He then applied to Lord Shelburne and Lord Thurlow, enclosing some of his poems to both; but these applications were equally unsuccessful with the former. At last, and not till after he had been threatened with arrest, he bethought himself of Burke. The letter which he addressed to Burke is a beautiful piece of writing, simple, dignified, and pathetic. 'The night after I delivered my letter at his door,' he told Mr. Lockhart some years after, 'I was in such a state of agitation, that I walked Westminster bridge backwards and forwards until day-light.' Burke immediately appointed a time at which he would see Crabbe; he received him with great kindness, and encouraged him to show him all his compositions. Having selected 'The Library' and 'The Village,' and having suggested in them many alterations which Crabbe assented to, he took these poems himself to Mr. Dodsley. 'The Library' was in consequence published in 1781. But Burke's attention did not stop here. He assisted him with money, and gave him a room at Beaconsfield, where he was treated in every way as one of the family; he introduced him to Fox, Sir Joshua Reynolds, Lord Thurlow, and other distinguished friends; and having advised Crabbe to think of entering the church, towards which he found him by no means disinclined, he exerted all his influence to get him ordained. His conduct towards Crabbe is indeed a brilliant chapter in the history of Burke.

Crabbe was admitted to deacon's orders in December, 1781, by Dr. Yonge, bishop of Norwich, and was ordained a priest in August of the year following. He commenced his clerical life as curate of his native town. Shortly after he obtained, through Burke's influence, the situation of domestic chaplain to the duke of Rutland, and resided in consequence at Belvoir Castle. 'The Village' appeared in 1783, having been revised by Dr. Johnson: its success was great, and Crabbe's reputation was now fully established. In the same year Lord Thurlow, who had taken a previous opportunity of apologizing for his first repulse of Crabbe, presented him with two small livings in Dorsetshire, telling him, as he gave them, that, 'by God, he was as like Parson Adams as twelve to the dozen.' Crabbe now married Miss Sarah Elmy, the object of his first love. The duke of Rutland had been, in the meantime, appointed lord-lieutenant of Ireland. Crabbe did not accompany him to Ireland, but apartments in Belvoir Castle were assigned to the young married couple. In 1785 Crabbe took the neighbouring curacy of Strathern, and removed from the castle to the parsonage of that parish.

It appears, that though Crabbe was treated most kindly by every member of the Rutland family, and felt for them in return great affection and esteem, especially for the duke, a man of amiable character and literary tastes, he found his situation at Belvoir Castle an irksome one. He liked not to 'eat the bread of dependence;' and cared not 'to bask in the sunshine of a great man's smile.'

Crabbe published 'The Newspaper' in 1785. He did not come forward again as an author until 1807, when, after an interval of twenty-two years, appeared 'The Parish Register.' He resided in the meanwhile successively at Strathern, at Muston in Leicestershire (Lord Thurlow having in 1789, at the duchess of Rutland's earnest request, exchanged his two small livings in Dorsetshire for those of Muston and Allington, both situated in the Vale of Belvoir); from 1792 to 1796 at Parham in Suffolk, taking charge of the neighbouring curacies of Sweffling and Great Glemham; then in Great Glemham Hall, a house belonging to Mr. Dudley North, his early benefactor; until at last, in 1805, he returned to his rectory at Muston. Though during this long period Crabbe published no poetry, he was not idle. He studied botany, which had always been a favourite pursuit, with great ardour; and wrote an essay on botany in English, which he was on the point of publishing, when, yielding to the remonstrances of a vice-master of Trinity College, Cambridge, against degrading the science by treating it in a modern tongue, he consigned his manuscript to the flames. He also pursued entomology and geology. He taught himself French and Italian, and superintended the education of his sons. He was also, according to his son's account, continually writing; and among his compositions during this period were three novels, which, upon his wife's suggesting that the tales would have been better in verse, he consigned to the same fate with the essay on botany.

Together with 'The Parish Register' there appeared, in 1807, 'Sir Eustace Grey' and other smaller pieces, and a reprint of his earlier poems; the object of the publication being to enable him to send his second son to Cambridge. Three years after, he published 'The Borough.' In 1813 he sustained a heavy affliction in the loss of his wife; and it was a fortunate circumstance, at a time when every scene at Muston would excite a painful remembrance, that the duke of Rutland, the son of his former patron, gave him the living of Trowbridge in Wiltshire. The incumbency of Croxton near Belvoir was added shortly after.

The remainder of Crabbe's days were, with the exception of occasional visits to his friends in London and elsewhere, passed at Trowbridge, where his conscientious discharge of his duties and his amiable character gained for him the love of all his parishioners. When in London he was much courted by those among the great who are studious to derive distinction from the patronage of literary men: and, what is more to the point, he now made the acquaintance of most of those who, during his retirement, had earned for themselves fame in his own vocation – Rogers, Moore, Campbell, Wordsworth, Southey, and Sir Walter Scott. His 'Tales of the Hall' were published in 1819 by Mr. Murray, who gave him 3000*l.* for them and the remaining copyright of his previous poems. In the autumn of 1822 he visited Sir Walter Scott at Edinburgh. From 1828 there was a perceptible change in his health, and though his mind retained its wonted cheerfulness, his strength of body gradually declined. He died on the 3rd of February, 1832, in his 78th year. The shops in Trowbridge were closed as soon as his death was known, and again on the day of his funeral; and a subscription was immediately set on foot among his parishioners for a monument to their departed rector, which has since been placed in Trowbridge church.

The moral character of Crabbe is an almost perfect model. Its greatest fault was an excess of gentleness. Thus, though he was not deficient in what is called moral courage, and though he heeded not rank or power or even physical force, when any of these threatened him in the performance of what he deemed his duty, he sometimes, in the common intercourse of the world, cowered at the roughness of ruder natures. Rising from a very low situation in life, he came to associate much with those whom the world sets up for worship; but, under circumstances whose corrupting influence few have withstood, he never lost that habit of self-dependence without which there is neither dignity nor happiness. If it be said that his many applications in early life to the great by rank and office indicated a disposition to place trust in nobles, it can be answered that accident first led him to Lord North, and that he persisted in his applications to him and others similarly situated, because he thought the encouragement of literature to be one great duty of those who fill the first offices of state. Joined with an indifference to factitious distinctions, was an absence of all pride occasioned by his own intellectual eminence. He was meek, observant of merit in others, and eager to impart to those who were, as he had been, distressed, a share of the advantages which his own good fortune had procured for him. As a husband, father, and friend, he was without reproach. His son's account of the manner in which his days were passed at the parsonage presents a delightful picture of domestic happiness.

The distinguishing excellences of Crabbe's poetry are simplicity, pathos, force, and truth in describing character. He has said himself that all his characters were taken from persons whom he had seen and known. Observing these closely, and specifying each *trait* and minute circumstance, he presents his readers with representations, not of classes of men, but of individuals. It is the minute accuracy of these representations that constitutes their charm. Who can forget Isaac Ashford? The celebrated descriptions of the parish workhouse, and of the 'disputatious crew' of thieves and smugglers in 'The Parish Register,' show the same faculty of minute observation, and have the same charm of faithful delineation. There are also in his poems some good descriptions of natural scenery, for instance, at the commencement of 'The Village;' but then it is only scenery of the sort for which what Mr. Jeffrey called his 'Chinese accuracy' is fitted. Crabbe was entirely without the power of invention. Viewing him, moreover, not merely as a poet whose business it is to please, but as one possessing powers above the common herd, which it is his duty to employ for the improvement of his fellow men and the increase of social happiness, we object to him that he has not gone beyond the representation of existing evil,—that he has revelled as in a luxury in descriptions of vice and woe, and has never cared to teach how the poor, of whom he is emphatically called the poet, may be made wiser and better and happier.

An edition of Crabbe's poems in eight volumes was published by Murray in 1834. The eighth volume consists of a collection of tales in verse, then published for the first time, which will not add much to the author's reputation. The Life by his son, the Rev. George Crabbe, a very pleasing piece of filial biography, occupies the first volume.

CRABRO'NIDÆ (Leach), *Crabronites* (Latreille), a family of Hymenopterous insects of the section *Aculeata* and subsection *Fossores*. Technical characters:—Head large, and appearing almost square when viewed from above; body oval or elliptical, narrowed more or less at the base, and joined to the thorax by a peduncle; antennæ short and generally thickened towards the apex.

According to Latreille, the following genera are included in this family:—*Tripoxylon, Gorytes, Crabro, Stigmus, Pemphredon, Mellinus, Alyson, Psen, Philanthus,* and *Cerceris*.

The species of the genus Crabro are chiefly distinguished by their having but one perfect cubital cell to the anterior wing; the mandibles terminating in a bifid point, and the antennæ being distinctly geniculated, they are sometimes filiform, and sometimes slightly serrated. The palpi are short, and almost equal. The clypeus is frequently clothed with a fine down of a glossy silver-like hue.

These insects are extremely active in their movements, and may be frequently seen settling on the flowers of umbelliferous plants, on palings, or on the leaves of plants, when the sun is shining upon them, lying wait in such situations, for the approach of other insects, which they seize and carry to their nests for the purpose of feeding their larvæ. The larger species of this country are mostly of yellow and black colours, the body being adorned with rings of the former colour, the smaller species are for the most part black.

Crabro cephalotes, is upwards of half an inch in length; black; the body is adorned with five yellow rings; the basal joint of the antennæ, and the tibiæ and tarsi are also yellow.

Crabro patellatus (Panzer), and several other species of this genus, are remarkable in having a large appendage attached to the external part of the anterior tibiæ; this is a thin plate of a somewhat rounded form, convex above and concave beneath, and is undoubtedly used in removing the soil whilst these insects are forming their burrows in the ground. Each burrow is stored with flies or other insects (depending upon the species of crabro to which it belongs); the eggs are then deposited with these flies, which constitute the food of the larvæ when hatched. Many species of Crabro form their cells in rotten trees or posts. Much that relates to the habits of these insects, however, remains to be discovered.

CRABTREE, WILLIAM. [See HORROX, JEREMIAH], as very nearly all that is known of Crabtree arises from the correspondence of the two.

CRA'CIDÆ, Mr. Vigors's name for a family of rasorial or gallinaceous birds (*Rasores*), which he considers to be connected with the Struthious birds, *Struthionidæ* (Ostrich family), by means of the *Dodo*, generally supposed to be now extinct, the foot of which, he observes, has a strong hind toe, and which, with the exception of its being more robust, in which character it still adheres to the *Struthionidæ*, corresponds exactly with the Linnean genus *Crax*. The bird, says Mr. Vigors, thus becomes osculant, and forms a strong point of junction between these two conterminous groups, which, though evidently approaching each other in general points of similitude, would not exhibit that intimate bond of connexion which we have seen to prevail almost uniformly throughout the neighbouring subdivisions of nature, were it not for the intervention of this important genus.

'The family of *Cracidæ*,' continues Mr. Vigors, 'thus connected with the *Struthionidæ*, are separated from the typical groups of the order by the length and robustness of the hinder toe, and by its being situated more nearly on a level with those in front. These birds placed in this manner at the extreme of the present order, assume more of the habits and appearance of the preceding order of *Perchers* than the other *Rasores*, with the exception of the family of *Columbidæ*. They are found most frequently to make their abode in trees, and to resort to the neighbourhood of forests: in the lesser number of their tail-feathers they evince an equal deviation from their more typical congeners, and they never possess a spur. This family contains the *Ourax* of M. Cuvier, and the true *Crax*, Linn., together with the *Penelope* and *Ortalida* of M. Merrem. The two latter genera have their hind toe articulated on a level with the front toes, and thus reconduct us to the *Columbidæ*. Their bills also, more lengthened than those of *Crax*, approach most nearly to those of the *Pigeons*, which, on the other hand, seem to meet them by the stronger form and curvature of the bill of *Vinago*, which deviates in these particulars from the general structure of its own family. The genus *Ortalida*, in particular, the feathered cheeks of which are distinguished from the naked face of *Penelope*, brings us in immediate contact with that family. Here it is, in this extreme of the order, that I would assign a place to the beautiful New Holland genus *Menura*, Lath., a group that has hitherto afforded more difficulty to the systematic writer than any other in the class. By modern authors it is generally placed among the *Perchers* on account of the length and low position of the hind toe. But its habits and manners are gallinaceous, as far as we can ascertain, and its general appearance decidedly evinces an affinity to the *Rasores*. The deviation in the structure of the foot from that of the typical *Rasorial* groups only indicates its being placed at a distance from them, and in that extreme of the order which connects itself with the conterminous order of *Perchers*. The same deviation, it has been seen, is found in other groups of its own family, and in the adjoining family of *Columbidæ*. A group newly discovered in some islands of the Eastern Archipelago, the *Megapodius* of M. Temminck, serves strongly to illustrate these principles and to corroborate my opinion as to the situation of the singular New Holland genus before us. The *Megapodius* brought home to France by one of her late expeditions, is confessedly gallinaceous in its habits, and as such has been placed, without hesitation, among the true *Rasores*, and yet its foot is precisely of the same construction as that of *Menura*.* The bill also shows no very material difference from those of the extreme groups of the *Cracidæ*. To return however to the general affinities of the family, it may again be repeated, that all the latter genera, thus united among themselves, evince an evident approach to the *Columbidæ*, from which, it may be remembered, we commenced our observations on the order. The whole of the groups of the *Rasores*, thus following each other in continued affinity, preserve their circular succession without interruption.' [MENURA.]

Character of the family.

Three *toes* before, one behind, the latter touching the ground throughout. *Head* feathered, generally crested: there is often a cere or naked skin at the base of the bill.

Mr. Swainson, 'Natural History and Classification of Birds,' vol. i., p. 153, states, that 'in the family of the *Cracidæ*, which connects the *Insessores* with the *Rasores*, the hinder toe is nearly as long as in the cuckoos, and is considerably more developed than in any other group of rasorial birds. We will say nothing of the genera *Megapodius*, *Palamedea*, and *Menura*, whose feet are well known to be enormous; or of *Opisthocomus*, because specimens of these

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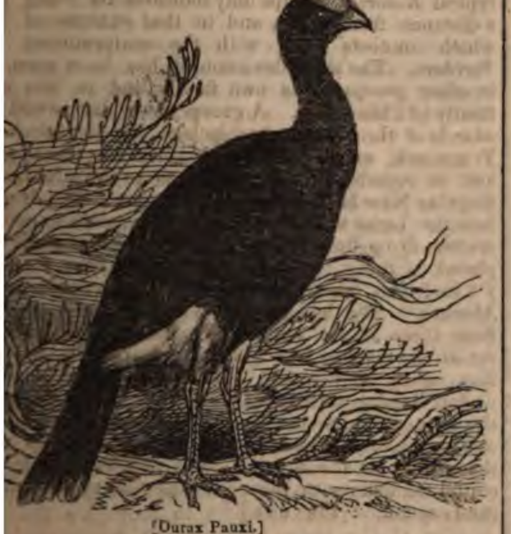
* But see post, Megapodius, p. 132.

nd rare birds are not upon our table. Confining
s to the genus *Penelope*, we may remark that the
nsidered by themselves, might be taken for those of
w, if the outer one was only versatile; it is evident
m the structure of the claws, that these birds are
ore arboreal than their congeners, for their claws
curved; and from their *lateral* and not *horizontal*
sion, as well from their acuteness, we conclude that
very little, if at all, employed in scratching the
their structure being similar to those of perchers,
pted only for clinging. The foot, in fact, of the
e, is not a rasorial but an *insessorial foot*, for it does
ess any one of the rasorial characters. Even the
, which, in all other rasorial birds, is raised above
, is here *placed upon the same level as the anterior*
hat no ambiguity should rest on this fact, we beg
he ornithologist's attention to the particular species
fore us, the *P. Aracuan* of Spix, one of the most
of the same genus. How this remarkable forma-
he foot of the typical *Cracidæ* should hitherto have
npletely overlooked, even by those who have specu-
much on the mode by which the *Rasores* and
es are united, is somewhat extraordinary*; we can
ount for it by the custom of examining specimens
cases, or on branches, instead of preserving them
in which state they can be handled in all direc-
But however this may be, the fact itself decides the
tested question as to which family of the *Rasores*
he nearest approach or rather forms the passage
ssessores; while, if this question be reversed, and
d which of the *Insessores* makes the nearest ap-
o the *Rasores*, we need only direct our search
ome of the long-legged Brazilian cuckoos, or at
nt to the singular genus *Opisthocomus*.'

Genera, Ourax. (Pauxi, Temm.)

ic character. — *Bill* short, strong, compressed,
convex, dilated at the base of the upper mandible
rny, oval, hard, and elevated substance. *Nostrils*
rced near the front, hidden, open beneath; *head*
with short and close-set feathers. *Feet* (tarsi) long
th.

le.—*Ourax Pauxi*, Cuv. *The Galeated Curassow.*



[Ourax Pauxi.]

bout that of a small hen turkey. *Head* and *neck*
with short velvety feathers of a rich black. All
of the plumage, with the exception of the white
and under tail-coverts, brilliant black, exhibiting
n positions a slight tinge of green. *Tail-feathers*
ith white. *Legs* red, claws yellow. *Iris* brown.
ght red: the protuberance with which it is sur-
(which is rounded in the young birds, and pear-
ith the narrow end directed forwards in the adult
a livid slate colour; it is more than two inches in
hen fully developed, hard and bony externally, and
y cellular, the cells communicating with the cavity
outh. This protuberance is not visible till after the first moulting, when it first appears in the form of a small tubercle, and becomes much larger in the male than in the female. In other respects there is little difference between the sexes, and the young are only distinguished by a browner tinge. The windpipe descends for a considerable distance in front of the sternum, immediately beneath the skin, and makes no less than three distinct convolutions before passing into the cavity of the chest. (E. T. Bennett.)

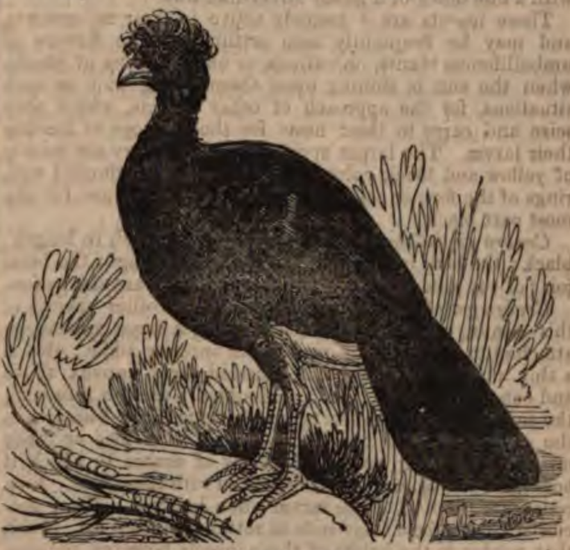
Locality.—Mexico, where the species lives in large companies perching upon the trees. Nest generally made on the ground. The young are led about by the female in the same manner as the hen pheasant or the common hen lead theirs. The first food of the chicks consists of worms and insects, but as they advance, fruits and seeds are added. Hernandez gives a very good description of the bird in his *Historia Avium Novæ Hispaniæ*, cap. ccxxii. The Galeated Curassow is easily domesticated and is enumerated by M. Temminck among the birds which bred abundantly in the menagerie of M. Ameshoff before the French Revolution.

In April, 1831, Mr. Yarrell pointed out at a meeting of the Zoological Society the peculiarities of the very elongated trachea of another species, *Ourax Mitu*, Cuv. This organ is produced between the skin and the muscles beyond the sternum, and reaches almost to the vent. It has been figured by Dr. Latham, M. Temminck, and others. The sterno-tracheal muscles extend along the whole of the tube, a disposition which, Mr. Yarrell remarked, prevails with one or two exceptions in all birds in which the fold of the trachea is not included in the bone. (*Zool. Proc.* 1830-31, part 1.) Mr. Bennett (*Gardens and Menagerie of the Zoological Society*) observes that the nostrils in *Ourax Pauxi* are seated behind the protuberance, and are perpendicular in their direction: the membranous cere which surrounds them, he adds, is covered with short velvety feathers.

Crax.

Bill moderate, long, compressed, higher than it is broad at the base, thick, carinated above, curved towards the end, surrounded at the base with a membrane; lore naked; nostrils lateral, longitudinal, pierced in the cere, and partially covered. *Head* crested with curled feathers. *Tail* spread out, inclined; tail-feathers, fourteen. Sixth quill the longest. *Hallux* reaching the ground with the first phalanx.

Example.—*Crax Alector*, Linn. *Crested Curassow.*



[Crax Alector.]

Description.—The plumage of the *Crested Curassow* is of a deep black, with a slight gloss of green upon the head, crest, neck, back, wings, and upper part of the tail; it is of a dull white beneath and on the lower tail-coverts. Its crest is from two to three inches in length, and occupies the whole upper surface of the head: it is curled and velvety in its appearance, and capable of being raised or depressed at will. The eyes are surrounded by a naked skin, which extends into the cere, and there assumes a bright yellow colour. Size about that of *Ourax Pauxi*. (E. T. Bennett.)

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* But see ante p. 128, 2nd column.

Locality and habits.—'This species,' says Mr. Bennett, 'is a native of Mexico, Guiana, and Brazil, and probably extends itself over a large portion of the southern division of the American continent. In the woods of Guiana it appears to be so extremely common that M. Sonnini regards it as the most certain resource of the hungry traveller whose stock of provisions is exhausted, and who has consequently to trust to his gun for furnishing him with a fresh supply. They congregate together in numerous flocks, and appear to be under little or no uneasiness from the intrusion of men into their haunts. Even when a considerable number of them have been shot, the rest remain quietly perched upon the trees, apparently unconscious of the havoc that has been committed amongst them. This conduct is by no means the result of simplicity, but proceeds rather from the natural tameness and unsuspiciousness of their character. Those however which frequent the neighbourhood of inhabited places are said to be much wilder and more mistrustful, being kept constantly on the alert to avoid the pursuit of the hunters, who destroy them in great numbers. They build their nests on the trees, forming them externally of branches interlaced with the stalks of herbaceous plants and lining them internally with leaves. They generally lay but once a year, during the rainy season; the number of their eggs being, according to Sonnini, from five or six, and to D'Azara, as many as eight. They are nearly as large as those of a turkey, but are white like a hen's, and with a thicker shell.' (*Gardens and Menagerie of Zool. Soc.*, vol. ii.)

Mr. Yarrell, in February, 1831, placed on the table of the Zoological Society the *trachea*, among others of *Crax Yarrellii*, *Red-knobbed Curassow*, a new species described from the Society's menagerie, and which had recently died. The trachea of this species differs from all those previously known, but most resembles that of *Crax alector*, Linn., while in external characters the bird approaches *Crax globicera*, Linn., from which it is distinguished by the redness of its cere, and by a prominence on each side under the base of the lower jaw in addition to the globose knob near the base of the upper. The tube in *Crax Yarrellii* is straight throughout its whole length, except a short convolution imbedded in cellular membrane placed between the shafts of the *os furcatorium*. The *trachea* is narrow, and the fold, invested and supported by a membranous sheath, gives off one pair of muscles, which are inserted externally below the apex of the *os furcatorium*. The lower portion of the tube immediately above the bone of divarication, sends off a pair of muscles to be inserted in the *sternum*. The upper pair of muscles (furculo-tracheal) influence the length of the tube above the convolution. The inferior pair (sterno-tracheal) have the same power over the bronchial tubes and that portion of the trachea which is below the convolution. (*Zool. Proc.*, 1830—31, part 1.)

We cannot take leave of the Curassows, properly so called, without drawing the attention of the rural economist to the following observations of the late lamented Mr. Bennett. Speaking of the Zoological Society's menagerie, that excellent practical zoologist says, 'Of all the gallinaceous birds in the collection, the most interesting are those which hold out to us a prospect of supplying our farm-yards with new breeds of poultry of a superior kind. Such are especially the Curassows. In many parts of South America these birds have long been reclaimed; and it is really surprising, considering the extreme familiarity of their manners, and the facility with which they appear to pass from a state of nature to the tameness of domestic fowls, that they have not yet been introduced into the poultry-yards of Europe. That with proper treatment they would speedily become habituated to the climate we have no reason to doubt; on the contrary, numerous examples have shown that they thrive well even in its northern parts; and M. Temminck informs us that they have once at least been thoroughly acclimated in Holland, where they were as prolific in their domesticated state as any of our common poultry. The establishment however in which this had been effected, was broken up by the civil commotions which followed in the train of the French revolution, and all the pains which had been bestowed upon the education of these birds were lost to the world by their sudden and complete dispersion. The task which had at that time been in some measure accomplished, still remains to be performed; and it may not be too much to expect that the Zoological Society may be successful in perfecting what was then so well begun, and in naturalizing the Curassow * as completely as our ancestors have done the equally exotic, and in their wild state, much less familiar breeds of the turkey, the Guinea-fowl, and the peacock. Their introduction would certainly be most desirable, not merely on account of their size and beauty, but also for the whiteness and excellence of their flesh, which is said by those who have eaten of it to surpass that of the Guinea-fowl or of the pheasant in the delicacy of its flavour.' (*Gardens and Menagerie*, &c., vol. ii.)

Lieutenant Maw, who appears to have shot a *Red-knobbed Curassow*, on his passage from the Pacific to the Atlantic down the river Marañon, says that the native Peruvian name for the bird is *Peury*.

Penelope.

Bill moderate, naked at the base, entire, convex above, wider than it is high, bent at the point; lore and base of the bill naked. Under the *throat* a naked skin which is capable of being inflated or swollen. *Nostrils* pierced in the cere towards the middle of the bill, half closed. *Foot* (tarsus) slender, longer than the intermediate toe; nails somewhat curved, strong, compressed, and pointed. Fifth and sixth *quill* longest. *Tail-feathers* twelve.

Example.—*Penelope cristata*, Gmel. The *Guan*.

Description.—Length about thirty inches, the tail being thirteen or fourteen. Upper parts dusky black or bronze, glossed with green, changing to olive in certain lights. A black stripe passes from the under part of the bill backwards and surrounds the ear. Fore part of neck and breast spotted with whitish, each of the feathers being bordered by white; belly and legs, lower part of the back, and under tail-coverts, reddish. Cheeks naked and violet purplish. Iris reddish brown. Bill blackish. Feathers of the back of the head long, forming a thick tufted crest, which the bird can raise or depress at pleasure. Naked part of the throat scarlet, with a contractile and extensile fold of depending skin. Mr. Bennett observes that this fold retains its elasticity after death. The female differs from the male principally in having her plumage, especially her under parts, more decidedly tinged with red.

Mr Yarrell (*Zool. Proc.* 1833, part i.) states that the *trachea* of the *Guan* is uniform in size and substance throughout its whole length. After descending by the neck in the usual way, it is extended and passes downwards under the skin, but over the outer surface of the pectoral muscle on the right side, to the extent of two inches beyond the angle formed by the junction of the two portions of the *os furcatorium*. The tube of the *trachea* is then reflected, and ascending to the cavity of the thorax, again turns to be carried to the lungs as in other birds, and is provided with one pair of true muscles of voice, which have the usual origin and insertion. The loop or fold of the tube formed on the surface of the pectoral muscle is imbedded in cellular tissue, and further retained in its place by a strong ligament, which firmly adhering to the loop, passes backwards to be first attached to the posterior angle of the *sternum*, and afterwards dividing once, and passing still further backwards, the two slips are inserted on the two elongated pubic points of the *pelvis*. This structure in the *Guan*, Mr. Yarrell observes, has been noticed and figured by Mr. Temminck, in his 'Histoire des Pigeons et Gallinacés.'

Mr. Bennett remarks that the manners of the Guan have little to distinguish them from those of the curassows. Although to all appearance equally capable of domestication, they have not yet been introduced into Europe in equal numbers with the curassows, nor has the same success attended the attempts to propagate them in this quarter of the globe. 'We are told however,' continues Mr. Bennett, 'by M. Temminck, that the proprietor of a menagerie in the neighbourhood of Utrecht had bred them for several years; and there can be little doubt that with proper care and attention these birds might be added to the stock of our domesticated fowls. They are spoken of as furnishing an excellent dish for the table. In a wild state they inhabit Guiana and Brazil, and perhaps extend still further to the north. Their food consists principally of seeds and fruits, which they search for and eat upon the ground: but the greater part of their existence is passed upon the trees, on the tops of which they perch, and in which they build their nests. They are often found in large bands, but generally pair together with the strictest constancy. The females lay from two to five eggs. Their flight, like that of most gallinaceous birds, in consequence of the shortness of their wings, is low and heavy; and in the performance of this action they derive much assistance from their tail, the feathers of which may be expanded in the shape of a fan. All the birds of this genus appear to be known in Brazil by the name of *Jacu*, pronounced *Yacou*, derived, according to Marcgrave, from their note. This, as might be expected from the conformation of their trachea, is extremely loud, insomuch that when a considerable number are collected near the same spot, the very woods, to use the expression of the scientific traveller just quoted, re-echo with their clamorous cries.' The same author observes that M. Spix added very considerably to the difficulties that previously existed in distinguishing the species of this interesting group, by the publication, in his 'Brazilian Birds,' of a series of figures representing apparently very slight modifications of the common form, but to each of which he has prefixed a peculiar specific name. Mr. Bennett expresses his belief that most of these will be found on further examination to be referable to the present species, which, from its long domestication in the poultry-yards of South America, must necessarily be subject to very extensive variations. (*Gardens and Menagerie of the Zool. Soc.*, vol. ii.)

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* One of the six medals offered as premiums by the Zoological Society of London is 'to the breeder of the greatest number of curassows in the year 1837.' This is as it should be.

[Penelope cristata.]

M. Lesson, on the authority of M. Goudot, mentions a species, *Penelope Aburri*, Goud., two feet three inches (French) long, the tail being ten inches. M. Goudot states that this species seems peculiar to the mountains of New Grenada, inhabiting temperate and cold districts; it is, he says, unknown in the great warm valleys and by the rivers. In the environs of the city of Muzo, celebrated for its mine of emeralds, this bird, he states, is known under the name of *Pavo-ô-guali*. The inhabitants of the neighbourhood of Bogota and of the valley of Cauca designate it by the term *Pava Burri*, or *Aburri Aburrida*, which when slowly pronounced well expresses its cry. The male does not differ from the female; and those which M. Goudot opened had two cœcums analogous to *Penelope Parakona* and *Pavila* (*superciliaris?*). The *trachea* descended without any fold in the lungs. There was no gravel in the gizzard, the walls of which were thin, and nearly entirely covered by the proper muscles. M. Goudot states that the species lives solitary, perches upon high trees, flies but little, and suffers the hunter to approach easily within shot. It is never seen on the ground. The berries of trees compose its food. Its nest is formed in a mass of dry leaves, disposed between the forks of trees. The eggs are three in number, white, and one inch eight lines in diameter. These birds, adds M. Goudot, are very common in the mountains of Quindiu, between Ilague and Carthagena. Their notes are the last that are heard on the approach of night, and the first that announce the dawn of day.

Ortalida.

Characters the same as those of *Penelope*, excepting that the head is completely feathered, and that there is no nakedness about the throat or round the eyes.

Example.—*Ortalida Motmot*, *Phasianus Motmot*, Gmel., *Phasianus Parraqua*, Lath. Colour red brown, bronzed above. Tail moderate. *Locality*.—Guiana.

[Ortalida Motmot.]

M. Goudot describes a new species from Santa-Fé de Bogota, which M. Lesson names *Ortalida Goudotii*. The bird, it appears, is found in the same places with the *Penelope Aburri*. Total length 23 inches, of which the tail is 9. Feet red; tarsus 2 inches 5 lines; middle toe 2 inches 4 lines, the claw being 5 lines and a half (French). The bill is blackish, brown at its point; the upper mandible 1 inch 5 lines; cere and naked membrane round the eyes blue. All the upper plumage brown, with deep green reflections, or rather of a very deep greenish. Feathers of the throat grey. Bottom of the neck, belly, and abdomen, as well as the thighs, covered with ruddy. No crest nor nakedness about the throat. No fold of the *trachea* in either sex. *Locality*.—The mountains of Quindiu.

M. Lesson observes that this bird approaches nearly to the last, but is clearly distinguishable from it, especially by the *trachea*, which does not descend upon the abdomen

Opisthocomus, Hoffm. (Hoazin, Buff.; Orthocorys, Vieill.)

Bill thick, robust, short, convex, bent at the point, which is suddenly compressed, furnished with diverging bristles at the base, which is dilated laterally; lower mandible strong, terminated in an angle; edges dentelated towards the origin. *Nostrils* mesial on the surface of the bill, pierced (*de part en part*), covered above by a membrane. *Feet* robust and muscular; tarsus shorter than the middle toe, the lateral toes long, equal, entirely divided; sole broad; toes bordered with rudiments of membranes. *Wings* moderate, the first quill very short, the four following graduated, and the sixth the longest. *Tail-feathers* ten. Example.—*Opisthocomus cristatus*.

[Opisthocomus cristatus.]

This species, which appears to be the only one belonging to the genus, is the *Hoatzin* and *Hoactzin* of Hernandez; who describes it (p. 320) as an inhabitant of warm districts, where it was seen sitting on trees by the sides of rivers, and as having received its name from a supposed similarity of the shrieking cry of the bird to the intonation of the word *Hoatzin.* Hernandez relates some strange stories of cures effected by its bones and by a suffitus of its feathers; but says that the bird is deemed inauspicious by the natives. Sonnini states that it is known in Guiana by the name of *Sasa.*

The *Hoazins* are said to live in pairs or in small troops, consisting of from six to eight individuals, in the flooded savannahs, which they prefer, and where they seek for their food the leaves of the *arum arborescens.* Their flesh is not considered good, having a strong smell of *castoreum* about it. These birds are by no means timorous: in stature and gait they resemble the peacock.

Megapodius.

Bill slender, straight, as wide as it is high, and flattened above at the base; upper mandible longer than the lower, slightly curved at its extremity; lower mandible straight, the point hidden by the edges of the upper mandible. *Nostrils* suboval, open, placed nearer to the point than to the base of the bill, nasal fossæ long, covered by a membrane furnished with small feathers. Space round the eye naked, head and neck well feathered. *Feet* large and strong, placed far backwards; tarsus large and long, and covered with large scales, compressed posteriorly; four very elongated toes, the three anterior ones nearly equal, united at their bases by a small membrane, which is more apparent between the inner and middle toe than between it and the outer one; posterior toe horizontal, touching the ground throughout its length; claws very long, very strong, flattened above, very little curved, triangular, obtuse at the point, nearly like those of *Menura. Wings* moderate, concave, rounded; third and fourth quills the longest. *Tail* small, wedge-shaped, scarcely exceeding the wings in length, and formed of twelve feathers. (Quoy and Gaimard, with slight alteration.) Example.—*Megapodius Duperreyii.*

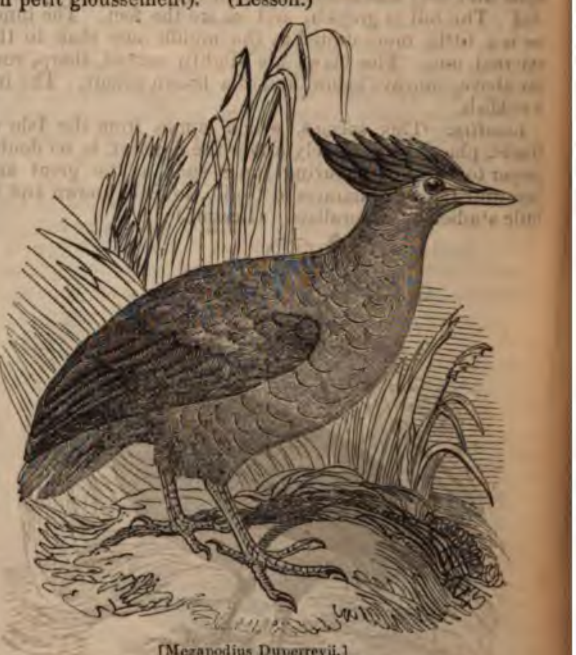
Description.—In size hardly so large as a partridge. Tarsi less elevated than they are in *Megapodius Freycinetii* and *M. rubripes.* The bird is, moreover, altogether better proportioned. Total length, from the extremity of the bill to that of the wings, which are longer than the tail, rather less than a foot (French). Tarsi strong, covered with scales, and 20 lines in length; middle toe, including the claw, 17 lines, hind toe 14, posterior claw 7. Bill slightly swollen towards its extremity, yellow, 8 lines in length. Nostrils suboval, covered with a membrane clothed with very small rudimentary feathers. Space round the eyes naked, but less than in the other two species. Neck well clothed with feathers. Iris reddish. A very thick crest covers the head; the feathers which compose it are raised (se redressent) towards the occiput. The wings are concave, an inch longer than the tail, and terminated in a point: the fifth quill the longest. Tail suboval, pointed, very short, composed of ten small feathers. Legs greyish, and feathered down to the tarsi; the claws slightly curved, pointed at the end, flat below, and of a brown colour. (Lesson.)

'The tuft,' says M. Lesson, 'of our *Megapodius Duperreyii* is of a brown yellow; the neck, the throat, the belly, and the lateral parts, are of a grey slate colour. The feathers of the back and the wing-coverts are large, and of a ruddy yellowish brown. Rump, upper part of the tail, and vent-feathers ochreous red. Quills yellow without, brown within, the shafts being ruddy brown.

'The middle toe is united to the inner one by a membranous border, which is wanting between the middle toe and the external one.

'In comparing our *Megapodius* with the *Menura* of New Holland, we cannot fail to perceive that it connects the last-mentioned genus with the gallinaceous birds, by forming a very natural passage. In fact, if we examine the position of the nostrils, the general form of the bill and legs, and the nakedness round the eyes—the membrane which unites the two external toes, but which is wanting between the middle toe and the inner one (an arrangement which is reversed in *Megapodius*)—the same length of the toes, the analogy in the form of the claws, the greater length of the posterior one, the concavity and the smallness of the wings—all these characters, in fine, coincide to confirm this passage, if we except the extraordinary grandeur and luxuriant form of the tail of *Menura,* a form without analogy among the other birds. *Megapodius* would thus belong to a small natural group, the *Lyriferi* of Vieillot (27th family); the name of which, in consequence of its having become improper, would have to be changed.'

Locality.—'*Megapodius Duperreyii,* the *Mangoipe* of the Papuans, inhabits the umbrageous forests of New Guinea, in the neighbourhood of the harbour of Doréry. The bird is timid, runs very fast among the bushes, like a partridge in standing corn, and utters a feeble cluck (un petit gloussement).' (Lesson.)



[Megapodius Duperreyii.]

M. Lesson states that he only observed *Megapodius Freycinetii* in the Island of Waigiou, and that the attempt to preserve it alive in cages was vain, for the birds soon died. Their flesh, he says, is black, very hard, and not very agreeable as food, although possessing a *fumet* which the cooking developes. The Papuans brought them on board the *Coquille* daily, and called them (those of the harbour of Offack at least) *Manesaqué.*

Both Pigafetta and Gemelli Carreri speak of the *Tavon* (*Megapodius*), and it would seem that this, the *Megapodius* of the Philippines, leaves its eggs to the fostering heat of the sun. The habits of the *Megapodii* of New Guinea and the neighbouring islands are, according to M. Lesson, entirely unknown.

Alecthelia.

The characters of the genus *Megapodius,* observes M. Lesson, established by MM. Quoy and Gaimard in the *Zoology* of the voyage round the world performed by the Uranie, are in great measure applicable to the subgenus *Alecthelia,* formed by M. Lesson for the position of a bird which differs from the true *Megapodii* or *Tavons,* by many distinctive characters.

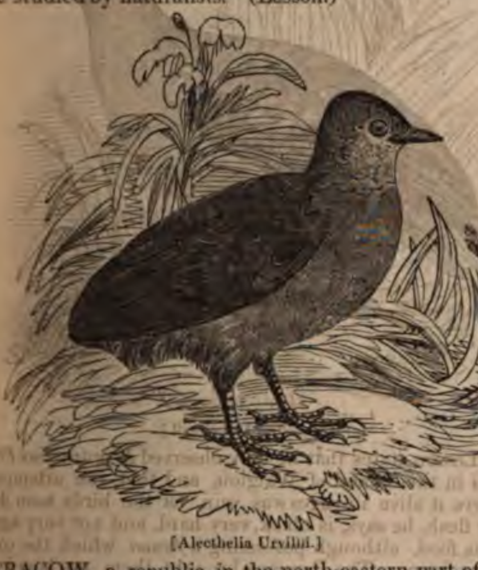
Bill short, compressed, pointed: the upper mandible prolonged, the lower mandible a little swollen and very short. *Nostrils* at the base of the bill separated by a straight ridge. *Head* and forehead abundantly covered with feathers down to the nostrils. Space round the *eyes* furnished with short and close-set feathers. Inner *toe* rather the shortest, membrane which unites the middle toe to the inner one almost absent. No *tail.* All the feathers of the body, except those of the wings, composed of loose barbs, very finely ciliated on each of the shafts.

Example.—*Alecthelia Urvillii,* Lesson, the only species known.

Description.—Total length from the extremity of the bill to that of the wings, 5 inches 4 lines. Tarsi 14 lines; middle toe 10, hind toe 8, claws 5, bill 6 (French). The bird is covered with loose and scanty feathers, but has upon the occiput a thick bunch of feathers. The general tint is brown, fuliginous, deepest above. Belly and throat brown, slightly tinged with ruddy colour; throat ash-coloured

Wings concave, rounded, the feathers entirely brown, the second, third and fourth being equal; the upper part is brown sprinkled with zigzag or irregular lines, not well defined, of ruddy yellow. Place of the tail-feathers supplied by very loose plumes, composed of very fine barbs, bristled with very slender approximated barbules, presenting much analogy with those of the Cassowary (No. 6, pl. 67, *Atlas de Peron*), and which, implanted in the rump in the same manner, form a feathery tuft as in the Cassowary; all the feathers of this bird, except those of the wings, are composed of multiple stems, very slender and soft, furnished with equal and very fine barbules which may be called *multirachid*. The bill is greyish, and so are the feet. The inner toe is a little more united to the middle one than to the external one. The claws are slightly curved, sharp, convex above, concave below, and of a brown colour. The iris is reddish.

Locality.—This species, which comes from the Isle of Guebé, placed immediately under the equator, is, no doubt, proper to the neighbouring lands such as the great and beautiful Isle of Halamiva or Golilo, so little known and so little studied by naturalists. (Lesson.)



[Alecthelia Urvillii.]

CRACOW, a republic in the north-eastern part of central Europe, formerly part of the woywodship or palatinate of the same name in the kingdom of Poland. It lies between Austrian Galicia, Prussian Silesia, and the south-western part of Russian Poland. With regard to size, it is the fortieth, to population the thirty-seventh, and according to density of population the seventh, in the series of European states. It is the only vestige that remains of Polish independence.

Cracow lies on the northern bank of the Vistula, and contains an area of about 490 square miles. The surface consists of an undulating plain, broken by low hills and woods, and extends to the banks of the Vistula, which forms its southern boundary towards Galicia. The Vistula, which is the chief river of Cracow, receives within the confines of the Republic, the waters of the small rivers Cznerna, Przemza, Radewa, Monuszka, Chobka and Wolka, and becomes navigable under the walls of Cracow. There are neither canals nor lakes in the country; at Krzessowice there are warm sulphurous springs. The climate is moderate, though not genial enough to ripen the grape; it is however salubrious and agreeable, and milder than in the other parts of Poland. The soil is rich, but as agriculture has made little progress, it produces scarcely more grain than is sufficient for the consumption of the inhabitants. Yet Cracow is considered the most cultivated portion of Poland. The vegetables and fruits are excellent. Its chief productions are corn, pulse, flax, wood, oxen, sheep, swine, game, fish, wax, and honey; also coals, iron, marble, freestone, clay, &c. but the quantity of wood is inconsiderable, and the iron found is not sufficient to supply even the single works at Krzessowice.

Cracow contains only two or three manufacturing establishments, the chief of which are the ironworks of Krzessowice. The peasantry spin and weave their own cloth, and there is little trade except in the capital. The republic is divided into land and town districts; the first must have a population of more than 2000; the latter of more than 2500; each district has its starost; and three districts form a circle with a justice at its head. The population are chiefly of Polish extraction, there being only from 400 to 500 Germans, and between 10,000 and 11,000 Jews; it amounted in 1803 to 93,100; in 1819 to 95,822; in 1826 to 118,000; and in 1832 to 123,157. It has a militia of 300 men, and a gendarmerie of 40; but no regular troops. Although the established religion is the Roman Catholic, all Christian denominations enjoy liberty of conscience and worship; the number of Protestants is about 1700.

The yearly income and expenditure as fixed by the Chamber of Representatives for the period 1833—1837 is 1,775,766 Polish florins, or about 44,500*l.* sterling. Cracow contains 2 towns, 2 market-towns, 71 villages and hamlets, 16 monasteries, with 87 monks and 69 lay brothers; 10 nunneries with 164 nuns; 100 churches. The bishop of Cracow has a chapter of 16 canons.

In the partition of Poland in 1795, Cracow fell to the share of Austria, and in 1809 was erected, with the whole of western Galicia, into the grand duchy of Warsaw. Its existence as a republic, dates from the Congress of Vienna in 1815, when the three great powers, Austria, Russia, and Prussia, not being able to agree to which of them it should be assigned, determined to form it into an independent republic under their joint protection, guaranteeing to it the perpetual neutrality and inviolability of its territory, except in the case of its affording an asylum to deserters, or offenders against any of the three protecting powers.

By the constitution of the Republic of Cracow, there is no distinction of ranks; all are equal in the eye of the law. The legislative authority is vested in a body of representatives elected by each district, three members of the senate (one of whom is president of the assembly), three canons of the chapter of the cathedral, three doctors of the university of Cracow, and six judges of the tribunals. This body annually holds a session in December, which continues about a month; makes laws, votes the budget, inspects the administration, nominates two-thirds of the senators as well as the judges, &c. The executive power is lodged in a senate of twelve members and a president, who, with eight of the senators, is nominated by the legislative assembly; two are chosen by the chapter and two by the university. Of the senators, eight are chosen for life, and four are elected annually; the president is chosen for three years. The senate draw up laws previously to their being laid before the legislature; and appoint to such civil and ecclesiastical offices as are not dependent on the chamber of deputies.

CRACOW (in Polish, Krakoo), the capital of the republic of the same name, is situated at the foot of Mount Krakus or Wavel (699 feet above the level of the sea), in the delightful and extensive valley of the Vistula, and on the left bank of the river, at its confluence with the Radeva, in 50° 4′ N. lat., 15° 15′ E. long. It is enclosed by three hills; the St. Bronislava, on which a monument, 120 feet high, has been erected, in memory of Kosciusko; the Krakus or Wavel, and the Wanda. It is united to the Austrian town of Podgorze by a bridge of rafts 145 feet long.

Cracow is surrounded with promenades, which have replaced the old ramparts, walls, and towers. It consists of three distinct quarters, Cracow, Stradom, and Kazimierz, which last lies on an island in the Vistula, and is joined to the town by a bridge. It is the residence of the Jews, who have here a synagogue. The suburbs are likewise of some extent.

This antient capital of Poland, where its kings were crowned and buried, received its name from Krakus, duke of the Poles and Bohemians, or White Chrobatia, who is said to have founded Cracow about A.D. 700. It was wrested from the Moravians by Ziemowit, the Bohemian, and was taken from the Bohemians in 999 by Boleslaus the Great, who raised it to the rank of the capital of Poland. Its antient limits were far more extensive, and its population treble the present amount. It had a flourishing commerce, and its numerous lofty towers and buildings still give to it, in the distance, the appearance of a large and handsome city; but this impression is destroyed on entering its dark, narrow, and deserted precincts. The town is however clean, and has a very spacious public square, surrounded with low miserable shops.

The most striking of its antient monuments is the cathedral, a beautiful specimen of Gothic architecture, and the finest in Poland; it was destroyed by fire, and rebuilt by Nanker, bishop of Cracow, in the year 1320. Here the kings of Poland were crowned, and its numerous chapels recall the events of the history of this kingdom, from Boleslaus to Kosciusko. It has 50 altars, above 20 chapels, and contains the tombs of most of the Polish monarchs, of Casimir, John III., Sobieski, St. Stanislaus, whose remains are enclosed in a silver coffin, Prince Poniatowski, Kosciusko, and Dombrowski, &c. The archives and library preserved in this edifice contain many valuable manuscripts. Its bell, the largest in Poland, was cast in 1520.

The castle, called the Königsburg, on Mount Wavel, a very spacious Gothic structure, the first building of which was, as is said, the work of Krakus about the year 700, suffered by two great conflagrations. It was restored to its pristine splendour by Augustus II. of Poland. It was fortified by Dumourier in 1768, and repaired when in possession of the Austrians, who converted it into barracks. Its subterranean vaults, which are excavated in the mountain, were formerly the depository of the royal regalia. Of the 71 churches which Cracow once contained, only 38 are at present devoted to the purposes of divine worship. The finest of these are St. Mary's, which is second only to the cathedral; the Protestant church of St. Martin, and many magnificent convents, of which several were abolished by the Austrian government. The other remarkable edifices are the episcopal palace, a spacious building of modern construction, with an historical museum for Sarmatian remains; the old Town Hall, a quadrangular, tower-like structure, evidently built for defensive purposes, &c. The Roman Catholic University, which was founded in 1364 by Casimir the Great, and in 1780 assumed the title of Schola Regni, is the oldest, and was formerly the only university in Poland. It contains a library, chiefly of old books, and a collection of 5000 MSS., principally on theology; an Observatory, situated in the suburbs of Wessola; a cabinet of natural history, &c. It has four faculties; in 1817 it had 131 students, and since then never more than 250 or 300, although it is open to all Poles under the Austrian, Russian, or Prussian dominion.

There are, besides, in Cracow, a Piarist college and gymnasia, normal, and various elementary schools, 5 hospitals, an orphan asylum, &c. The town contains nearly 2000 houses. Under Sigismund I. Cracow had 80,000 inhabitants; in 1818 they had dwindled down to 24,556, and at the present day their number is about 24,900. There are no manufactures, except a few of cloth and woollens. The trade, which is principally in the hands of the Jews, is not extensive, although Cracow is the chief depôt of Hungarian wines, salt, and wax, and the central point of commerce between Poland and part of Galicia and Hungary.

Near Cracow is Lobzoff, a summer residence of the former kings of Poland; it was built by Casimir the Great, whose mistress, Esther, a Jewess, was buried in the gardens belonging to it.

CRA'CTICUS. [Barita.]

CRADLING, slight timber-framing constructed under floors in order to form arched or coved ceilings to this timber-work the lath and plaster is attached. The same term is applied to the rough framing to which the entablature and cornice of a shop-front may be attached.

CRAIG, JOHN, was educated at St. Andrews, Scotland, and then became a tutor in England to the children of Lord Dacre. Returning to his native country when the two kingdoms were involved in war, he entered the Dominican order, but was shortly afterwards imprisoned on a suspicion of heresy. On regaining his liberty, he went into England again, thence to France, and finally to Rome, where his talents recommended him to the notice of Cardinal Pole, under whose direction he entered the Dominican order at Bologna. Here he became entrusted with the education of the novices, and was also employed in various ecclesiastic missions throughout the continent; and for his important services was rewarded by the appointment of rector to one of the schools of the order. Having afterwards become a convert to the opinions of Calvin, he was seized, and accused of heresy, then sent to Rome, where, after an imprisonment of nine months, he was summoned to stand his trial before the court of Inquisition. Here he made a bold confession of his faith, and, being accordingly convicted, was condemned to be burnt. It happened, however, that on the night previous to the day on which this sentence was to be put in execution, the pope died, and the populace rejoicing to be free from his yoke, rose in a tumultuous manner, and broke open the prisons. Craig came forth from his cell, and fled to Vienna, whence, after remaining there a short time, he was dismissed by the emperor with letters of safe conduct, under the protection of which he passed through Germany into England, and thence to Scotland, where he arrived soon after the establishment of the Reformation. He preached for a short time in Latin to the learned in St. Magdalen's chapel, when, having recovered his native language, he was appointed minister of Holyrood-house, and became a principal coadjutor of Knox, the great Scottish reformer, in the work of reformation. He was afterwards appointed minister of Montrose, and in 1574 minister of Aberdeen, in which capacity he was chosen Moderator of the General Assembly of the church of Scotland, which met in October, 1576. The following year he was removed to Edinburgh; and in 1579 was associated with the learned John Duncanson as minister to the royal household.

Craig drew up the National Covenant in the year 1580; he was also the author of two theological works; the one an answer to an attack on the Confession of Faith, the other a form of examination entitled Craig's Catechism, which was appointed by the General Assembly to be used in schools and families in place of 'The Little Catechism.'

He died at Edinburgh, on the 12th December, 1600, at the advanced age of 89; but for some years before had performed no public duty. (See M'Crie's *Melville*; and Tytler's *Life of Sir Thomas Craig*.)

CRAIG, SIR THOMAS, of Riccarton, was, according to Baillie's biographical notice of him prefixed to the last edition of his celebrated Treatise on the Feudal Law, the son of Mr. Robert Craig, merchant in Edinburgh, a descendant of the Craigs of Craigston, in Buchan; though, as we shall afterwards find, this statement has been disputed. Baillie says that Craig was born about the year 1548; but this is plainly a mistake, for in 1552 he was sent to the university of St. Andrews, and entered as a student of St. Leonard's, a college which had been erected about forty years before 'for training up poor scholars in learning and the arts, to the glory of God, and the spiritual edification of the people.' He remained here only till he proceeded bachelor of arts, when he went to France to prosecute his studies in the university of Paris. On his return to Scotland, about 1561, the Reformation had just been accomplished there; and his distinguished relative, the Rev. Dr. John Craig, was then minister of Holyrood-house. This learned divine had himself arrived in Scotland only a twelvemonth before. Under the care of this eminent person the religious views of young Craig were changed, and, devoting himself entirely to study, he left nearly all his youthful contemporaries in literature far behind him.

He passed advocate in the Court of Session at Edinburgh on the 2nd February, 1563; and in July that year we find him in the judicial situation of justice depute to Archibald, fifth earl of Argyll, hereditary lord justiciar of Scotland (*Abstract Books of Adjournal, MS. Adv. Libr.*), an ardent friend of the Reformation. In May, 1564, he had a grant from the crown of the escheat of Alexander Innes, of Crombie; and in the following January, another grant from the crown of the unlaws or amerciaments of any six persons he might choose among those unlawed in the justice courts, and this *so long as he should enjoy the office of justice depute*.

His first appearance as an author was on occasion of the queen's marriage with her cousin Darnley, for which he composed an epithalamium, or marriage song. The piece, which is not to be found among Craig's poems in the 'Delitiæ Poetarum Scotorum,' was only lately discovered. As described by Tytler, it is in its general tone too full of effort, too ambitious in the display of classical allusions, and too richly and laboriously coloured, but not without some passages of beauty and simplicity. The little offering was tendered to a woman—a queen—a bride, and all these centred in one who was not inattentive to the interests of learning. On the 24th October that year, Craig had a grant from the crown of the unlaws above mentioned *during his life*.

In his office of justice depute Craig appears to have been particularly zealous. A remarkable instance of this occurred the following month. On the 14th November, 1565, one John Pigget was indicted before him for the murder of one Agnes Robertson; and what is singular, there was produced in evidence a certificate in Latin by Craig himself of the fact of Pigget committing the murder by assault; and moreover we find Craig protesting for an assize of error, or writ of attaint, in case the jury should acquit the prisoner. (*Abstract Books of Adjournal, MS. Adv. Libr.*) Conduct like this shocks our feelings of judicial propriety; yet we must condemn it with lenity, and would impute it to the times rather than to the man. On the 18th of December he had a grant from the crown of the escheat of Alexander Dunning of Westercrieff; and the week following, a grant of the escheat of James Johnston, in Middlegill, and others. In looking at these grants of escheat, we must bear in mind, that in the times we speak of, the judges were commonly paid out of the issues of their court, and it is probable that Craig had then no other source of remuneration. In 1574 however, when, as we shall find, he was promoted in his profession, he received from the lord treasurer 120*l*., being his fee as justice depute for three years from Whitsunday, 1571, at the rate of 40*l*. a year, which was an allowance equal to that then paid to the lord advocate. Craig presided in the court of justiciary held in April, 1566, where Thomas Scot, the sheriff depute of Perth under Lord Ruthven, the hereditary sheriff, and Henry Yaire, a priest, servant to the Lord Ruthven, were adjudged to be hanged and quartered, and their heads set upon the turret of the buildings adjoining the royal palace, under the suspicion of having been accomplices in the murder of Rizzio, who was openly assassinated in the queen's presence by the Lord Ruthven, the Lord Chancellor Morton, and others, at the head of whom was Darnley himself.

On the 19th of June following, the queen was delivered of a son, and Craig again appeared as a court bard, hailing the birth of the young prince in a Genethliacum in Jacobi principis Scotorum. He seems soon afterwards to have married Helen Heriot, daughter of the influential laird of Traborun, in the county of Haddington; and in 1569 his eldest son Lewis was born.

Craig continued in the office of justice depute till the end of the year 1573, when he was appointed sheriff depute of Edinburgh, under the earl of Morton above mentioned, the hereditary sheriff, to which place and that of admiral of Scotland the earl was appointed by the regent Murray, in 1567, not long after he had been reinstated in the chancellorate; and Craig's younger brother Robert was made justice depute in his room. From the beginning of the year 1576 Craig was in the courts as a practising counsel down to the beginning of the year 1581. Morton was that year committed to Dumbarton castle for his supposed concern in the murder of Darnley; and the same year Craig was ordered to enter his person in ward in the same castle of Dumbarton. Craig at last obtained his liberty, but was not replaced in the office of sheriff depute.

In April of the above year, 1576, Craig got a crown charter of the estate of Craigfintray, in the county of Aberdeen, to himself and his heirs male; whom failing, to his brothers John, James, Robert, and Oliver, and their heirs male; whom failing, to the heirs male whatsoever of William Craig, of Craigfintray, bearing his name and arms; the charter proceeding on the resignation and surrender of the said William Craig to the above effect. The precise relationship existing between these persons is not known; but from the destination Mr. Tytler supposes that William Craig was the father of the above brothers. He accordingly disputes Baillie's account of our Craig's lineage, and adds that he was the heir of the property and the representative of the family of Craig of Craigfintray. But there are reasons for not concurring in Mr. Tytler's opinions which seem to us conclusive.

In April, 1588, Craig obtained a crown charter of the lands of St. Lawrence Houses, in the county of Haddington, to himself and Helen Heriot, his wife; and from about that time forward we find him again in practice at the bar. He resumed also his poetic pen, and wrote some commendatory lines to Jacks Onomastichon, published in 1592. The same year the king brought a reduction of some deeds and conveyances executed by his Majesty under influence in his minority; and Craig, who had now been about thirty years at the bar, and enjoyed a very high professional reputation, was taken into the cause to assist Skene and old M'Gill, the crown counsel.

It was probably about this time that Craig contemplated his great work on the feudal law. Such a work was in a manner new to the law literature of Scotland. The learned King, his junior at the bar, had improved upon his predecessor, Kintore, and composed a Treatise on Maritime Law,—probably the first regular work on that branch of jurisprudence in Britain; and Balfour's 'Practicks' were well known. But no Erskine had yet arisen, no Stair, no Mackenzie; and Hope was at this time but a 'servitor' to Nicholson, who, like most of his brethren, regarded Sharp and Craig with the awe due to a superior order of beings. But Craig narrowed his powerful mind, its fancy and genius, and all its accumulated stores of learning and experience, to a temporary object; and to adopt the sentiment if not the language of one who had weighed his merits, instead of seizing the precious opportunity he enjoyed of presenting to his country a just system of her national jurisprudence, he not only passed by the evidences of her common law which lay beside him, but endeavoured to sink them into oblivion in favour of the civil and feudal laws. (Ross's *Lectures*, vol. ii. pp. 9, 10). He had scarcely risen from his learned labours however, when he found that Elizabeth was on the eve of her demise; and that various intrigues were carrying on and cabals formed to secure her crown, with a view to the king's succession to which his treatise on Feuds was composed. On the 1st of January, 1603, therefore, he dedicated to the king a treatise on the Succession to the Throne of England, which he had written in confutation of the jesuit Parson's Conference on the Disputed Succession, wherein the right of the people to choose their king was boldly reasoned, and the crown indirectly claimed for the infanta of Spain. But in less than three months after, the queen repeated on her death-bed her former declaration that her cousin the king of Scots should be her successor. James accordingly ascended the throne of England without dispute; and Craig's reply to Doleman was never printed.

On the king's departure for England with his family, Craig wrote a Paræneticon of congratulation: and on the same occasion, a Propempticon, or farewell poem, to the young prince Henry. The same year he composed his 'Stephanaphoria,' in honour of the king's coronation; of which ceremonial Craig seems to have been a witness, having, in all likelihood, accompanied the royal party into England; and previous to his return home he addressed to the king a short poem, in which he took a solemn farewell of his Majesty, and, at the same time, of the Muses.

Soon after his return Craig was appointed one of the commissioners nominated by the parliament to meet with commissioners from England and treat of a union between the two kingdoms; and thereupon in the summer of 1605 he wrote his treatise on the union. About the same time he wrote his treatise on homage, to vindicate Scotland from the charge of feudal dependence on the crown of England, brought against it in the chronicles of Hollinshed. Neither of these works was ever published; and the latter doubtless for obvious reasons. The tilt against the old chronicler by a knight so well accomplished as Craig can be enjoyed in the closet; but it would have been unwise to set the lists before the world, or renew feelings of jealousy between nations now united under one and the same crown.

It is probable that Craig had the offer of a seat on the bench, though he was never raised to it; but his son Lewis was, somewhere between the month of February, 1604, and the month of June, 1605, knighted, and admitted as an ordinary lord, when he had been little more than four years at the bar.

In the year 1606 Craig held the office of advocate for the church of Scotland; and some time before his death, as he would not formally accept the honour of knighthood, the king commanded that he should be everywhere saluted by the style accorded to that honour.

The particulars of his death are not known; it took place on the 26th of February, 1608, when he had been upwards of forty-five years at the bar, and probably therefore when he was not much short of seventy-five years of age.

CRAIG, JOHN. The dates of his birth and death are unknown; but he was alive in the interval 1685-1718. He was a Scotchman by birth, and was rector of Gillingham, in Dorsetshire. He deserves remembrance as one of those who were active in developing the principles of the theory of fluxions after its appearance. His writings are partly in the Philosophical Transactions, and partly published separately. The latter are, 'De Calculo Fluentium,' London, 1718, with two books 'De Opticâ Analyticâ.' 'De Figurarum, &c. Quadraturis,' London, 1693. There had previously, in 1685, appeared a tract on the same subject. 'Theologiæ Christianæ Principia Mathematica,' London, 1699, a very silly attempt to apply numerical reasoning to historical evidence. He concludes from a formula that the evidences of Christianity will be extinct by lapse of time in 1454 years from 1696, or A.D. 3150, at which date he therefore places the commencement of the Millenium. Craig is called by some continental writers the introducer of the theory of Leibnitz into England. [FLUXIONS.]

CRA'MBE MARI'TIMA, or SEA KAIL, is a glaucous spreading plant, with broad-toothed sinuated leaves, and dense corymbs of large white flowers, found occasionally on the sea-coast of England, and now commonly cultivated in gardens for the sake of its delicate tender shoots. Naturally the flavour of the plant is strong, cabbage-like, and highly disagreeable, but in the state in which it is sent to the kitchen, it is merely a colourless mass of delicate fleshy vegetable tissue, with little or no flavour. This arises from the shoots that are to be cooked being grown in darkness, and with a little more speed than usual. For this purpose a garden-pot is inverted over the crown of an old sea-kail stock, in the winter before the leaves sprout. Over the pot is thrown a little litter, or some decaying leaves, or some old tan, so as to increase the temperature of the earth, and to exclude light; after a week or two the pot is examined from time to time, and when sprouts five or six inches long have been produced, they are cut off and fit for table.

Sea kail loves a light sandy soil, well drained in winter and richly manured. It will continue to bear cutting for twenty years together without suffering much; and is one of the most simple and useful of all culinary plants for a small garden. It is generally grown in rows eighteen inches or two feet apart.

CRA'MBUS, a genus of moths (*Lepidoptera Nocturna*) of the family Tineidæ (Stephens).

In crossing dry meadows during the summer time, we observe numerous little moths fly from the grass at every step we take; they soon settle again, and are then not easily detected, owing to their mode of folding their wings, which when shut almost inclose their slender bodies, and partly surround the blade of grass on which they rest; their form is then long and narrow, pointed at the head, and somewhat truncated at the opposite extremity. Their colouring is often brown and white, disposed on the upper wings principally in longitudinal lines. Very frequently, however, we find them adorned with beautiful metallic colours, generally of silvery or golden hues. Such are the insects which constitute the genus *Crambus*, and of which we possess about forty species in this country. The technical generic characters are:—Proboscis distinct; wings convoluted round the body when at rest; superior wings narrow; palpi long, the inferior the longer; head furnished with short closely-applied scales.

When the wings are expanded, these moths commonly measure about an inch in width; they are called in England the *Veneers*, and sometimes *grass-moths*.

CRAMER, GABRIEL, born, 1704, at Geneva; died, 1752, at Bagnols. He was professor of philosophy at Geneva, and author of a large number of works, for a list of which the 'Biogr. Univ.' refers to Sénebier, 'Hist. Litt. de Genève.' We have here only to mention him as the editor of the works of John and James Bernoulli, of the correspondence of the former with Leibnitz, and to notice his 'Analyse des Lignes Courbes Algébriques,' Geneva, 1750. This work is the largest collection of examples which exists, and is of permanent utility to elementary writers. So far as expressions entirely algebraical (as distinguished from transcendental) are concerned, it is a complete treatise on the elementary theory of curves.

CRAMP, a sudden, violent, and rigid contraction of a muscle, with pain, often intense. [SPASM.]

CRAMP, or CRAMPERN, is a piece of metal, usually iron, bent at each end and let into the upper surface of two pieces of stone when their perpendicular faces are joined together. Cramps are employed in the masonry of all solid structures. Copper, though more expensive, is better adapted for cramping, on account of its durability, than iron, as the iron, through oxidation, causes the stones to split. The antients often used bronze cramps to bind their masonry together, as in the Colosseum. A great many of the cramps of this building have been cut out on account of the value of the metal. When a piece of stone is placed perpendicularly over another, without being connected with any other stone at the side, as in the Gothic pinnacle or in the shaft of a column, an upright piece of iron or copper is used, which is termed a plug. Cramps are cemented to the stone with lead; sometimes plaster, and even sulphur is used. In the fourth volume of Stewart's 'Athens' are some interesting details by Mr. Cockerell of the manner adopted by the Greeks in cramping the stones of the temple of the giants at Agrigentum. The Egyptians sometimes used wooden cramps.

CRANBERRY, the fruit of two species of Oxycoccus. The *English cranberry*, Oxycoccus palustris, is found wild abundantly in the fens of Norfolk, Lincolnshire, and many other parts of England, always by the side of little rills, and not among stagnant water; it has slender trailing thread-like shrubby shoots, clothed with tiny linear leaves, and has a five-parted pink corolla with the segments sharp-pointed and turned back. The fruit is a round austere red berry, which makes excellent tarts and one of the many kinds of marmalade. The Russian cranberries of the shops are borne by this species. They are not gathered till after the disappearance of winter. Near Petersburgh the cranberry plant is so common, that the snow is stained crimson by the berries crushed to pieces by the passage of sledges over them. The *American cranberry*, Oxycoccus macrocarpus, is very like the other, but its leaves, flowers, and fruit, are larger; and the latter has a more medicinal taste. It is imported from the United States, in hogsheads, in considerable quantity, and used for the same purposes as the other; but it is considered of inferior quality.

Oxycoccus palustris has never yet been cultivated to any good purpose; chiefly owing to the difficulty of giving it a supply of running water. The Oxycoccus macrocarpus will grow readily and bear abundantly if planted in peat earth in a moderately damp and slightly shaded bed. It is however seldom so treated, the berries themselves being so cheap in the London market.

We believe that what in Scotland is called cranberry marmalade, is not prepared from the berries of the cranberry, but from those of the Vaccinium Vitis Idæa.

CRANBORNE. [DORSETSHIRE.]

CRANE. [GRUIDÆ.]

CRANGON. [CRUSTACEA. SHRIMP.]

CRA'NIA. [BRANCHIOPODA.]

CRANIOLOGY. [PHRENOLOGY.]

CRANMER, THOMAS, the second son of Thomas Cranmer and Agnes, daughter of Laurence Hatfield, his wife, was born at Aslacton, in Nottinghamshire, on the 2nd of July, 1489. The respectable family from which he descended had been settled in that county for some generations. His first instruction was received at a village school, from which he was removed by his mother, who had become a widow, and who placed him, in 1503, at Jesus College, Cambridge, where he became a fellow in 1510-11. He applied with great diligence to the studies of the University: Greek, Hebrew, and theology were the principal objects of his industry. Before he was twenty-three years old, Cranmer married a woman of humble station but respectable character, a kinswoman of the landlady of the Dolphin; and having in consequence forfeited his fellowship, accepted the appointment of lecturer in Buckingham, now called Magdalene College. The duration of this employment was very short; for in about a year after his marriage, his wife having died in childbed, by a somewhat irregular proceeding he was restored to his fellowship at Jesus. The agents of Wolsey, who had founded this celebrated college at Oxford, were now searching the kingdom for men of talent and learning to fill the vacant chairs in that establishment; and Cranmer was distinguished by them with the flattering offer of high and lucrative employment. After some hesitation, he refused the new dignities. In 1523 he took the degree of D.D. During his residence in the university, he had undertaken, in addition to his other duties, the charge of educating two sons of a Mr. Cressy, who was connected with him by marriage; and when the sweating sickness broke out in Cambridge (1528), retired to that gentleman's house at Waltham Abbey, where he was occupied with the instruction of his pupils and the prosecution of his studies. This change of residence influ-e remainder of his life. By order of Henry VIII., of learning had been chosen from each uni- o discuss the validity of his marriage with his widow, Catharine of Aragon, and Cranmer, among vas selected; his absence from Cambridge, how- vented him from giving his assistance to the dele- io finally elected a substitute in his place. Either lly or by design, Gardiner and Fox (afterwards of Winchester and Hereford) being in attendance king, who was on a journey, met Cranmer at sy's table, and inquired anxiously the opinion of guished a man upon the all-absorbing matrimonial

He replied, that although he had not given nsideration to the question, he thought the course llowed appeared to be sufficiently simple. The ould be determined by reference to the Bible— e settled by divines, the most proper persons to e it, and by those of the English universities, who vell fitted to entertain it as those of Rome or any ountry. The report of this judgment, which was ly new, gave great satisfaction to the king, who ely sent a messenger to require his attendance at e. Unwilling to forsake a life of study and retire- nmer endeavoured to excuse himself from attend- ourt. His excuses, however, did not avail; and tant adviser having been graciously received, was led to reduce his opinion to writing, and consigned ospitality of Lord Wiltshire, the father of Anne The opinion was soon written. It asserted that age of Henry with his brother's widow was con- by the authority of the Scriptures, the councils, athers; and that the pope had no power to give sation for that which was contrary to the word of anmer having professed his willingness to main- positions in the presence of the pope, was ac- with the king's intention immediately to send him Pains were taken to make this judgment known. himself disputed upon it at Cambridge, and several over to his opinion. He then returned to dance upon the court; and having been appointed to the king, and presented to a benefice and the onry of Taunton, joined the others who were as- with him in the embassy, and travelled to Rome close of 1529.

mbassadors, finding all arguments unavailing to Clement to favour the divorce, quickly returned nd. Cranmer alone remained in Italy. At length patience was exhausted by continued refusals to to maintain in public the judgments of the Eng- foreign universities, which were for the most part e to the king's cause. The pope conferred on him, sake of conciliation, the empty title of 'Supreme ary,' and soon afterwards gladly saw him turn his n Italy (1530). In prosecution of the same busi- nmer now went to France, and also to the emperor any—an expedition which, although it produced ve public result, led to an event of great private nce to himself. Regardless of the Romish in- for clerical celibacy, during this residence abroad ed (1532) a second time; the object of his choice niece of his friend Osiander, the pastor of Nurem- his imprudent act, which he could not avow, ex- n eventually to many unworthy evasions. It was after they were united, before Cranmer received Archbishop Warham's death (August, 1532), and 's intention to raise him to the see of Canterbury. red four months to elapse, in the hope that the ght change his mind, and then unwillingly ac- is promotion, which the necessary oaths respecting and obedience to the pope rendered unacceptable: consecrated on the 30th of March, 1533, making protestation, at the time when he swore submission pe, 'That he did not intend by this oath to re- mself from anything that he was bound to either uty to God, or the king, or the country.' 'By this,' net (*Hist. Reformation*, vol. i.), 'if he did not wholly integrity, yet it was plain he intended no cheat, ct fairly and above-board.' Afraid of a rupture gland, the pope accepted less than the usual fee.

er, soon after his appointment, discussed the king's convocation; and having travelled to Dunstable, town the commission adjourned in order to be near Catharine's residence at Ampthill, he there (23 May, 1533) declared the marriage null and void. Five days afterwards he publicly married the king to Anne Boleyn, a private marriage having taken place in the January previous. He also officiated at their coronation on the 1st of June, and stood sponsor to the Princess Elizabeth, who was born in the following September. The business of his office and parliamentary duty now occupied his time. With his assistance were passed several statutes, by which the power of the pope in England was materially diminished; the convocation and universities assented to these statutes, pronouncing that 'the bishop of Rome has not any greater jurisdiction conferred on him in this realm of England than any other foreign bishop.'

In 1534, when Sir Thomas More and Fisher, bishop of Rochester, refused the oath of supremacy, Cranmer's best endeavours were used in vain, first to overcome the scruples of the recusants, and afterwards to dissuade the king from executing the sentence that had been pronounced upon them. In this year, with the consent of the convocation, he set on foot a translation of the Bible, by dividing Tindal's version of the New Testament into nine or ten parts, which he required the most learned bishops to revise; the translation was completed and ultimately printed at Paris. In 1535 Cranmer assisted in the correction of a second edition of the King's Primer, a book containing doctrines bordering upon Protestantism, of which it has been asserted that the archbishop was originally the compiler. His continual study of the bible, and the notes that he had collected upon all heads of religion, both from places in scriptures, and ancient fathers and doctors, fitted him most fully for the undertaking. In August he wrote a curious letter (Strype) to the king, respecting the publication of his supremacy by the clergy, and urged him to the suppression of the monasteries, which he considered inconsistent with true and full reformation. Cromwell was now raised by the king to be head of his ecclesiastical affairs, under the title of Vicar-general, and Cranmer consecrated Latimer and Shaxton to the sees of Worcester and Salisbury. In 1536 died Catharine the divorced queen; and Henry being now tired and jealous of Anne Boleyn, soon got rid of her. Cranmer was forbidden the court, lest his presence might impede the proceedings against the queen, from whom he received uniform kindness. In virtue of his office he pronounced her marriage void (1536), and on the day after her execution the king was united to Jane Seymour. In June the archbishop opened the convocation, where Cromwell presided as Vicar-general; the record of the late queen's divorce was sanctioned without the opposition of Cranmer or any other member. After much violent and useless discussion, the synod proceeded to debate upon the sacraments. Cranmer spoke at considerable length, and articles were afterwards framed by him, and others of the 'new learning,' as the doctrines of the reformers were then called, by which considerable innovations were effected. The pope, who was watchful of the proceedings of England, threatened to assemble a synod, for the sake of passing censures upon Henry; in anticipation of which, Cranmer and others signed a declaration that the king need not obey their decisions, in case such an assembly was convened. With the assistance of many eminent divines, Cranmer arranged a compilation called the Bishops' Book, inculcating the doctrines of the Reformers as expressed in the articles of the preceding year. The king, to whom this book was submitted, himself inserted some corrections, from which the archbishop was bold enough to dissent. However ill Henry's temper might have brooked such contradiction from another, he bore it patiently from the archbishop, who had been his most useful friend, and we find that in the October of this year, when the queen gave birth to Prince Edward, the primate and the duke of Norfolk stood sponsors at his baptism.

The destruction of the greater abbeys was now rapidly proceeding; and the funds which arose from them were lavished by Henry upon unworthy favourites, until Cranmer, who had hoped to apply them to the promotion of religion and education, remonstrated against their improper application. A sum of money was obtained for the foundation of some new bishoprics, but the king's prodigality could be checked no further. In the autumn of 1538 the primate came to London to meet an embassy of German Protestant divines, for whom he strove to procure a conference with the English ecclesiastics. To the great disappointment both of the ambassadors and the reformers, the king opposed their wishes, and directed Tonstal, a bishop opposed to the ‘New Learning,’ to draw up an answer to the dissertation which had been compiled by the German divines.

On the 5th of May, 1538, Cranmer and others were appointed commissioners ‘to inquire (Le Bas, vol. i. 204) into the debated doctrines, and to prepare such articles as would pacify the spirit of controversy.’ At the end of eleven days, the labours of the commissioners coming to no result, the duke of Norfolk offered six articles (Burnet, vol. i.) for the consideration of the House of Lords. Cranmer's opinion agreed only with one of these articles. Being desired by the king to explain himself in writing, he composed a treatise upon the case, which, with his secretary, to whom it was intrusted, became the subject of a singular adventure. (Burnet, vol. i.) In parliament, he argued for three days with considerable learning and eloquence, until the king, who favoured the articles, angrily desired him not to appear again in that house before they had become law. Cranmer, obedient to Henry in most points, in this respectfully resisted the king's commands: but although he continued present, he was unable either to throw out the duke of Norfolk's measure, or to alter the sanguinary penalties which it contained. As soon as this act was passed, Latimer and Shaxton resigned their bishoprics, an example which, contrary to expectation, the archbishop did not think it his duty to follow. He retained his see, and lived in retirement with his wife, who however was soon compelled to retreat to Germany.

In July, 1540, the primate presided at the convocation which pronounced the unjustifiable sentence of dissolution of the marriage which had been solemnized between Henry and Anne of Cleves. This ridiculous ceremony was quickly followed by the execution of Cromwell.

The misconduct of Catherine Howard, whom Henry had married as soon as he had put away his former queen, coming to the knowledge of the archbishop, he undertook to report her profligacy to the king (1541). After an investigation, the proofs of her crimes were held to be conclusive; she was condemned, and, after a delay of some weeks, during which time Henry, through a message, of which Cranmer was the bearer, promised to spare her life, she was executed.

The maintenance of the ground that the Reformation had gained, and the extension of it where it was possible, now (1542) became the sole occupation of Cranmer, who had transferred to the universities the task of revising a new edition of the Bible published the year before, which it had been proposed to apportion among the bishops, requiring an English version of such part from each, whatever might be his opinions. This was considered a step gained, as it certainly was the preferable method: and notwithstanding the Reformers did not in all things prevail (for a prohibition against Tindal's Bible was secured by their opponents), they had still further success in procuring an order that the scriptures should be read in English by the ministers in the church service. In a minor degree Cranmer's attention was occupied in reproving the excess of luxury in which some ecclesiastical establishments as well as the bishops had indulged.

In May (1543) appeared the King's Book, which was in fact little more than a new edition of the *Institution*, altered in some points by the papal party: it received its name from the preface, which was written in Henry's name. The clergy being hostile to this book, Cranmer, at a visitation of his diocese, in submission to the king's supremacy, forbade them from preaching against any portions of it, however they or he himself might dissent from them. The exertions which he had used for the correction of his diocese, in which religious variance was at a great height, were watched and examined by his political adversaries, who hoped to found on them such accusations as would ensure his ruin. The prebendaries of Canterbury and some magistrates in Kent, encouraged by Gardiner, after holding a succession of meetings, finally drew up articles accusing Cranmer of abusing his power. These charges were submitted by the prebendaries to the council, and by the council to the king. Henry immediately caused the accusation to be sifted by a commission, who declared them to be unfounded, and the authors of the conspiracy afterwards submitted themselves to Cranmer, who refrained from bringing them to punishment.

In 1544 Cranmer successfully exerted himself in parliament to carry a bill to mitigate the severity of the statute of the Six Articles. He also assisted in compiling an improved English Litany, essentially similar to that which is now in use. Difficulties however were increasing around him, and he had the dissatisfaction of seeing the seals, which were now resigned by Lord Audley, his personal and political friend, conferred upon Lord Wriothesley, an adherent of the Roman Catholic party. By this appointment, as well as by the death of the duke of Suffolk, it was expected that the king's favour towards the Reformers might be weakened. Nor indeed was it long after Suffolk was in his grave before Cranmer, who, with three others, had been associated with the queen in the government of England during Henry's temporary absence in France, had reason to feel his loss. The duke of Norfolk and other members of the privy council accused him of spreading heresies through the land, and prayed the king, that, for the safety of his dominions, the archbishop might immediately be committed to the Tower. Henry, on the same night that the accusation was received, caused Sir Anthony Denny to carry a message to Cranmer, who rose from his bed to attend upon the king at Whitehall. The council assembled on the following morning, and summoned before them the primate, who had been insultingly kept for an hour in a servant's waiting-room. At length sentence of imprisonment was passed upon him, but, to their surprise and confusion, he produced the signet of the king, from whose hands he had received it the night before. The council did not venture to proceed any farther in the case.

After a peace had been concluded with France (1546), Anhault, the French admiral, came to England. A resolution was made by him, and sanctioned by the king, that the Reformation should be proceeded with, and that in both countries the mass should be changed into a communion, the form of which Cranmer was ordered forthwith to draw up. This was the last year of Henry's reign.

The king, who of late had grown so corpulent and unwieldy that he was raised up and let down the stairs by a machine, after an illness of some weeks, sank under his disease on the 27th of January, 1547. Cranmer was named one of the executors of his will, and one of the regents of the kingdom.

On the accession of Edward, who had not yet completed his tenth year, and, the better to establish his supremacy, the bishops received anew their bishoprics at his hands. The first public act of the primate was the coronation of the new king (February 20, 1547), and the delivery of a short address which he then substituted for the customary sermon. No one that heard the expressions of the archbishop could hope for the restoration of papal supremacy; all things indeed betokened a still further extension of the Reformation. An inquiry into the state of religion, by means of a visitation of the whole kingdom, was immediately set on foot: twelve homilies, four of which are ascribed to Cranmer, were drawn up, and ordered to be placed in every church, with the translation of Erasmus's paraphrase of the New Testament, for the instruction of the people. It is true that these measures, though they had many supporters, met with frequent opposition. Gardiner continued to argue, both in person and in writing, against the homilies and the paraphrase, which the bishop of London also proclaimed to be heretical. Nevertheless Cranmer's influence prevailed: and when he produced, in convocation, an ordinance that the laity as well as the clergy should receive the sacrament in both kinds, the proposition passed *unanimously*, and soon after obtained the sanction of the legislature. By the same parliament the Act of the Six Articles and other severe statutes were repealed.

During this winter session of parliament it was proposed to confer upon the king such chapels, chantries, and colleges as had escaped his father's grasp. There were few subjects upon which Cranmer's opinion coincided with that of the Roman Catholic party, but in this case he joined their ranks, and voted in opposition to the bill. He now (1548) revived the proposal for substituting a communion office for the mass, and a service was framed in time to be circulated to the clergy for their use at the following Easter.

The more considerable labours which occupied the Protestants at this time still remain to be told. An English translation of a catechism which had been written in German and in Latin by one Justin Jonas, was published by the archbishop, entitled ‘Cranmer's Catechism.’ In the month of May a commission of twelve divines, with Crannt their head, was appointed for the compilation of nglish liturgy. Nor were these the only additions to rdinary duties of the primate; he took charge of a which was passed, permitting marriage among the y. By the end of November the Prayer-book was ed, and on the 15th of January, 1549, legal sanction given to it. Great opposition was made to these ges in different parts of England, in Wiltshire, Somer- orfolk, and especially in the west, where at the insti- of their religious teachers the people took such ns as they could procure, and mustered in consider- force. The legislature, anxious to quell this disturb- desired Cranmer to draw up an answer to fifteen s of remonstrance which had been framed by the gents. A very masterly reply (Strype's Cranmer, dix 40) was written, but not completed, before the s of the insurrection were apprehended and executed, e rebels had dispersed. It would have been more to nour of the archbishop if the spirit that pervaded his had been carried into a commission, at which he pre- for the suppression of certain heresies, for he would ave escaped the stain of having condemned two per- the stake; but however amiable and forbearing was neral disposition, no excuse can be offered for him or friends Ridley and Goodrich, who, with others, were ated in this affair. Upon the condemnation of Seymour (1549), Cranmer signed the warrant for his tion, notwithstanding the canon law set forth that rchman should meddle in matters of blood. What- nay have been the primate's conduct towards Sey- towards his brother the Protector Somerset it was ptionable: from the time that his distresses com- d till his execution was effected by the enemies whom akness of his character and elevated station had d, he retained Cranmer's firm and invariable friend- Bonner, the bishop of London, was now degraded by ssioners, of whom Cranmer was one. When this ssion was dissolved, an ordinance was signed by the e, the chancellor, and four others of the council, for olition of Roman Catholic books of devotion: an ad- was also made at this time to the ritual that had been uted for them, in the shape of a formulary for ordina- and other steps were taken by the primate in order to a better knowledge of the creed of the Protestants. mbeth he received the most eminent foreign divines, Bucer, Fagius, Peter Martyr, with several more.

nmer was greatly troubled at the discussions of the respecting the removal of altars from the churches e placing of communion tables in their stead. This en done (1550) partly at the recommendation of r, a divine who had been driven from England by the the Six Articles, and who, during his residence abroad, dopted very scrupulous opinions. In July, Hooper ade bishop of Gloucester: and soon after Cranmer d from him a refusal to wear the usual episcopal This question, upon which the primate himself sometimes to have hesitated, was now brought to an If a dignitary of the church had been suffered to tinue the vestments of his order, such was the state lower clergy that they would immediately have the signal and relinquished the surplice and the Cranmer, upon consideration, determined to oppose r's intentions, and in case of an obstinate adherence scruples, to remove him from his bishopric: a com- e eventually followed, and he adopted some of the habits.

bishop of Chichester would not obey the order re- g the removal of altars, and the primate consequently d him of his see. The case of bishop Gardiner, who w been in prison nearly two years, was also proceeded rticles were sent to him touching the king's supre- —the full obedience owed to him notwithstanding his —that he had power to correct what was amiss in the s, &c.; and these, with some exceptions, he signed. articles were then framed, treating of the marriage clergy, the suppression of masses and images, the ok of service, &c.; to these he refused to put his upon which the commission, consisting of the primate, Ridley, who had succeeded Bonner in London, and ers, eventually deprived him of his bishopric and sent ack to the Tower. The conduct of Cranmer in the of Bonner and Gardiner was a great exception to his moderation. Gardiner, during his imprisonment, occupied himself in answering a treatise published by Cranmer, entitled the 'Defence of the True Doctrine of the Sacrament.' This controversy was carried on by the archbishop until the end of his life. The subject of it was one which had greatly occupied the mind of his friend, bishop Ridley, as well as his own; he had more than once changed his opinions, which at length became fixed according to the doctrine maintained in his treatise. (Jenkyns's *Remains of Cranmer.*) His arguments with Gardiner and Smythe, his chief opponents, show considerable skill and learning.

At the close of this year a revision of the Service-book of 1548 was commenced by him, with the assistance chiefly of Ridley and Cox, who, with Peter Martyr and Bucer, stated objections and recommendations in writing. The undertaking was checked in 1551, by the lamented death of Bucer, who (Burnet says) was, 'by order of Cranmer and Sir John Cheek, buried with the highest solemnities that could be devised.' The bishops being now (1551) for the most part divines favourable to the Reformation, the compilation of articles for the greater uniformity of faith was undertaken by them at the suggestion of the king. This additional labour so filled the hands of Cranmer, that his time was nearly always occupied by one or other of the great duties that he had imposed upon himself: scarcely could he be spared to attend at the trial of Bishop Tonstal, a man of moderation and learning, against whom accusations were brought forward in December. The bishop was deprived of his see, a sentence which was so contrary to Cranmer's wishes and opinion, that, together with Lord Stourton, a Roman Catholic, he entered his protest against it. It was not till this year (1552) that Cranmer gave up all hope of effecting an agreement in religious doctrines among all the churches that had withdrawn from the Papal supremacy. He was greatly disappointed at the failure of a scheme in which he had always been sanguine of success. The Reformers had now to lament the declining health of the king, but they did not relax their exertions in the cause of religion, for the Service-book was finally completed and the Book of Common Prayer adopted by parliament in the spring of 1552. A project for the reformation of the ecclesiastical courts was revived, and soon completed under the superintendance of the archbishop: only the king's signature was required for its validity. In May, 1553, Edward issued a mandate that the clergy should subscribe to the Forty-two Articles upon which the divines had agreed; but he died soon afterwards without authorizing the new ecclesiastical code, which it scarcely need be said was never afterwards adopted.

No sooner was Edward dead than Lady Jane Grey was proclaimed queen: and a letter was sent to the Princess Mary declaring Queen Jane to be the sovereign. This letter was signed by many of the principal persons in the state, and among others by Cranmer. His zeal for the Protestant cause must have blinded him to the danger of an enterprise directly contrary to the resolution he had formed upon first hearing of the project. On the 9th of July, 1553, the chief officers of state swore allegiance to Jane: on the 20th we find many of those who had been zealous in her cause, 'impatient to send in their submissions to Mary.' On the same day an order was sent by Mary to Northumberland to disarm, which paper, strange to say, was signed by Cranmer. The hopes of the Protestants were now at an end; Queen Mary's unshaken attachment to the Roman Catholic creed was universally known; Gardiner was released and made chancellor, and power of appointing preachers given to him instead of to the primate: a commission was also granted to the bishops of London, Winchester, Chichester, and Durham, to degrade and imprison Protestant prelates and ministers on the charges of treason, heresy, and matrimony.

Cranmer's friends recommended his immediate flight; but in consideration of the high office that he held, he rejected their advice. In the beginning of August he was summoned before the council, and ordered to confine himself to his palace: on the 27th he was again brought before the same tribunal; and in September, together with Latimer and Ridley, was committed to the Tower. During his confinement to the palace, in refutation of some reports that the primate would come over to the Roman Catholics, he wrote a declaration against the mass. This was not published, but by some means, respecting which there is a difference of opinion (Todd, vol. ii.; Burnet, vol. ii.), copies were obtained of it, which reached the council, and were openly read in Cheapside. In the Star-chamber Cranmer avowed the writing, and his intention of affixing it to every church-door in London. The council committed him not only for treason against the succession of the queen, but for perseverance in 'disquieting the state.' The queen did not oppose the committal.

In March, 1554, Cranmer was removed, in company with his fellow-prisoners, to the prison of Bocardo at Oxford, where was renewed the controversy respecting the Lord's Supper, which, by the queen's desire, was named the subject for discussion.

On the 13th of April, the persons sent by the convocation to dispute appeared in the university, and Cranmer, who was first called before them, after examining the questions set before him (Burnet, vol. ii.), entered into argument upon them. After him reasoned Latimer and Ridley, amidst much shouting, hissing, confusion, and insult, so that the assembly, says Burnet, 'looked liker a stage than a school of divines.' On the 19th the discussion was revived; and on the 28th they were again brought to St. Mary's, where it was declared, that unless they would turn, they were obstinate heretics, and no longer members of the church. Cranmer then replied, 'From this your judgment and sentence I appeal to the just judgment of the Almighty, trusting to be present with Him in Heaven, for whose presence in the altar I am thus condemned:' and having thus spoken he was removed again to his prison.

He had some days before sent a petition to the council and the queen, praying pardon for his offences towards her, but the bearer to whom he had intrusted the papers broke them open, and it is not known that they reached their destination. However this may be, the council decreed that the charge of treason should be withdrawn, and the proceedings for heresy followed up, that the pains of fire, and not the axe, might be the manner of his death.

It was now discovered that the tribunal before which Cranmer had been tried was not competent to decide the case, and that the sentence was illegal. The pope therefore issued a fresh commission, and on the 12th September, 1555, the primate was again examined by Brokes, the bishop of Gloucester, and two civilians, Martin and Story. After some discussion, sixteen articles of accusation were produced, touching which eight witnesses were examined, and then the case closed. It is remarkable that, previous to these proceedings, Cranmer was summoned to appear within eighty days before the pope at Rome: this must have been a mere fiction of papal law, not intended for him to obey, as indeed it was impossible for any prisoner to do. Not long after Cranmer was sent back to prison, he heard of the execution of Ridley and Latimer, and after a few more weeks had passed, he received from Cardinal Pole an answer to two letters that he had written to the queen during the interval between the last proceedings at Oxford and the day that these bishops were brought to the stake. It appears from these letters that the primate's adherence to Protestant principles was still unshaken. On the 29th of November the eighty days had elapsed, and on the 4th of December he was excommunicated and deprived of his bishopric. A letter from the pope (Paul IV.), bearing date the 14th of November, affirming him to be contumacious, because 'he took no care to appear' at Rome when cited, and declaring him guilty of heresy and other enormities, finally commanded his execution. On the 14th of February, in obedience to this mandate, Cranmer was degraded. It was within a few days after this that the fortitude of a mind which had hitherto been firm gave way under the pressure of misery and the close prospect of a torturing death. The love of life overcame his firmness: he forsook his principles, and wrote a recantation of his faith. By whose exertions his resolution was shaken we cannot ascertain; but this unworthy sacrifice of opinion served only to render his enemies triumphant: whatever had been their promises, the recantation was of no avail towards the preservation of his life. On the 20th of March, the eve of his execution, he was visited by Dr. Cole, the provost of Eton College, who had been ordered by the queen to attend him. During this interview Cranmer gave answer that he remained firm in the *Catholic* faith as he had recently professed it, an answer that has by some been considered equivocal. After Cole had left him, Garcina entered the prison, and requested him to transcribe a recantation, to be delivered by him at the stake, which the prisoner consented to do. On the following day he was led to St. Mary's church, where, after an exhortation had been read by Dr. Cole, and Cranmer had finished his private devotions, he solemnly addressed the people, openly professing his faith, and at length declaring, 'Now I come to the great thing that troubleth my conscience more than any other thing that I ever said or did in my life; and that is the setting abroad of writings contrary to the truth which I thought in my heart, and writ for fear of death, and to save my life, if it might be; and that is all such bills which I have written or signed with mine own hand since my degradation, wherein I have written many things untrue. And forasmuch as my hand offended in writing contrary to my heart, therefore my hand shall first be punished. For if I may come to the fire, it shall be first burned. And as for the pope, I refuse him, as Christ's enemy, and antichrist, with all his false doctrine.' The whole assembly was astonished at this speech· they had supposed that he would have confirmed and not retracted his recantation. He was then hurried away to the stake, where he stood motionless, holding up his right hand, and exclaiming, until his utterance was stifled, 'This unworthy hand! Lord Jesus receive my spirit!'

Cranmer's diligence and application were unusual: he was deeply read in theology and canon law, and was familiar with Hebrew, Greek, and Latin, as well as French, German, and Italian, which he acquired during his travels: the copiousness of his common-place books gave weight to his opinion, and readiness to his power of argument. His reservation respecting the oaths which he swore when appointed archbishop, his subserviency to Henry VIII. in annulling his marriages, his share in the condemnation of some heretics, his conduct at the disgracing of Bonner and Gardiner, and the want of courage which made him recant after his condemnation, are great blots on his character. But though his conduct on these occasions was marked by dishonesty, intemperance, and want of firmness, these were rather impulses than habitual and characteristic vices, for it cannot be denied that Cranmer was sincere, mild, and moderate, and for the most part a firm man: nor is it to be forgotten that persecution was the policy of all religious parties at this period. He had moreover the virtue of constancy to his friends, a very rare quality in the times in which he lived; and never relaxed his friendship towards Anne Boleyn, Cromwell, or Somerset in their adversity. The affability of his manners, and the gentleness of his temper, made him beloved by many friends and men of learning, to whom he also extended a liberal hospitality; so that his protracted imprisonment and cruel death was one of the most unpopular measures of Mary's government. A complete collection of the extant works of Cranmer has been published at Oxford by Dr. Jenkyns.

(Strype's *Memorials of Cranmer*; Fox's *Acts and Mon.*; Burnet's *Hist. Reform.*; Gilpin's, Todd's, and Le Bas's *Lives of Cranmer*; and the general histories of the period.)

CRAPE is a light transparent fabric composed of silk, from which, by the mode of its preparation, all the gloss has been taken, and which, when dyed, as it usually is, of a black colour, is worn as the sign of mourning for the dead.

The weaving of crape is conducted according to the simplest method of the weaver's art, all its peculiarity being given to it in the dressing, which it receives after it is taken from the loom. The silk is used without its having been washed or dyed, and consequently with all the natural viscid gum which forms a part of its composition as spun by the worm. For thin crape, the only preparation which the filaments undergo previous to the weaving is the simple twisting, which forms the first process of the throwing mill, and in which state the thread is technically called *singles*. When it is intended to make a more substantial fabric, the warp is made of two and sometimes three filaments twisted together, which in that state are called *tram*: the weft is still composed of singles. After the web is taken from the loom, it is dressed with a viscid solution of gum, which in drying causes the individual threads to resume, as far as the interlacing will admit, the form they originally held previous to their being twisted in the throwing mill, and thus is produced the peculiar wrinkled appearance by which crape is distinguished. This fact will be shown if a piece of crape is washed in water hot enough to discharge the gum, when the web will resemble thin gauze.

CRASHAW, RICHARD, an English poet, the son of the Rev. William Crashaw, a divine of some note in his day, was born at London, but in what year is uncertain. In early life he was placed, through the kindness of Sir Henry Yelverton and Sir Randolph Crew, upon the foundation at the Charterhouse, whence, in March, 1632, he went to Pembroke Hall in Cambridge, and took the degree of B.A. in 1634. He afterwards went to Peterhouse, of which he was a fellow in 1637, and became M.A. in 1638.

In 1634 he published a volume of Latin poems, mostly devotional, in which the celebrated line is found upon the miracle at Cana in Galilee, which has been ascribed to other and greater poets than Crashaw:

> 'Nympha pudica Deum vidit, et erubuit.'
>
> 'The modest water saw its God, and blushed.'

A second edition of his 'Poemata and Epigrammata' was published at Cambridge, 8vo., 1670.

At what time Crashaw was admitted into holy orders is uncertain. Wood says he took degrees at Oxford in 1641; about which time he seems to have become a popular preacher, full of energy and enthusiasm. His degrees, however, do not appear in the public register. In 1644, when the parliamentary army expelled those members of that university who refused to take the covenant, Crashaw was among the number; and being unable to contemplate with resignation or indifference the ruins of the church establishment, he went over to France, where his sufferings and their peculiar influence on his mind prepared him to embrace the Roman Catholic religion. In 1646 the poet Cowley found Crashaw in France in great distress, and introduced him to the patronage of Charles the First's queen, who gave him letters of recommendation to Italy: there he became secretary to one of the cardinals at Rome, and was made a canon in the church of Loretto, where he died of a fever, soon after his promotion, about the year 1650. His 'Steps to the Temple, Sacred Poems, with other Delights of the Muses,' was published in 12mo., 1646; a second edition, 1648; and a third, also called second in the title, 8vo., 1670. Pope occasionally borrowed thoughts from Crashaw, but improved them. Crashaw resembled Herbert in his turn of mind, but possessed more fancy and genius. (See the new edit. of the *Biogr. Britannica;* Chalmers's *Biogr. Dictionary*, vol. x., p. 482-485; Wood, *Fasti Oxon.*, Bliss's edit., vol. iv., p. 4; Ellis's *Specimens of the early English Poets*, vol. iii., p. 224.) In 1652 a posthumous volume of his Poems was published at Paris, accompanied with vignettes by Messager, entitled 'Carmen Deo nostro, te decet Hymnus—Sacred Poems, collected, corrected, augmented, most humbly presented to my Lady the Countesse of Denbigh, by her most devoted servant R. C., in hearty acknowledgement of his immortall obligation to her goodness and charity,' 8vo. An edition of his English Poems, selected from the two volumes, was published by Peregrine Phillips, 12mo., London, 1785.

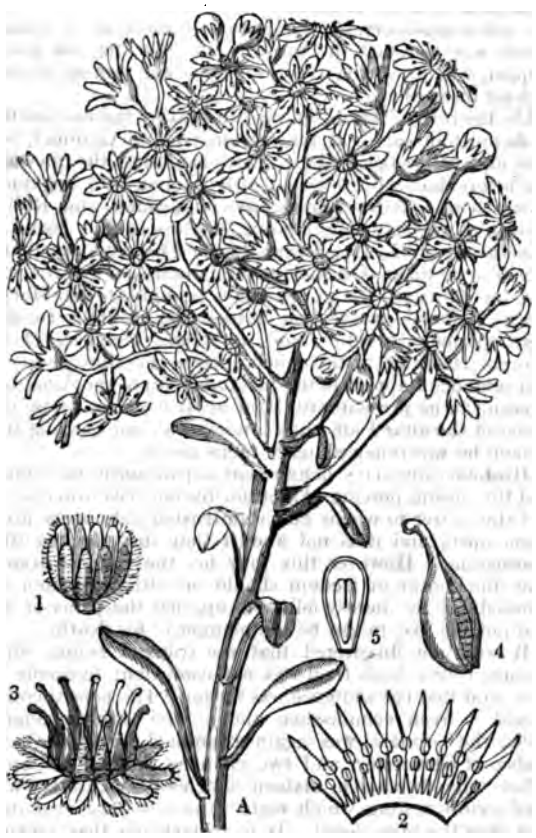
CRASSATELLA. [CONCHACEA.]

CRA'SSINA. [VENERIDÆ.]

CRASSULA'CEÆ, a natural order of Polypetalous Exogens, forming by itself the Crassal alliance of the Apocarpous group. It consists of succulent plants, with herbaceous or shrubby, and annual or perennial roots, growing in hot dry exposed places in the more temperate parts of the old world chiefly. On the sun-scorched cliffs and volcanic soil of the Canaries, and on the dry sterile plains of the Cape of Good Hope, they are most abundant. Their flowers are arranged in panicles, spikes, cymes, and corymbs; each has a calyx of several divisions, alternating with which is the like number of petals, alternating with which is the like number of stamens, or twice as many, alternating with which are as many distinct carpels as there are segments of the calyx. The stamens arise from the tube of the calyx; there is usually an hypogynous gland at the base of each carpel; the carpels are often of the same colour as the petals; and sometimes in monstrous cases the anthers bear ovules as well as the ovaries. The fruit consists of a number of distinct follicles, each containing numerous minute seeds; the embryo lies in the axis of fleshy albumen.

Many species of Crassula, Rochea, Sempervivum, Sedum, &c., are cultivated for the beauty of their flowers; the various annual Tillæas, &c., are obscure weeds; houseleeks (different sorts of Sempervivum) are grown for their refrigerant qualities; and the leaves of Sempervivum arboreum possess powerful tanning qualities.

All the hardy species may be grown on old walls, roofs, rock-work, or other places thoroughly drained of moisture; the greenhouse kinds require what is called a dry stove treatment, that is, they must be potted in a mixture of lime rubbish, broken pots and earth; in summer they are freely exposed to the weather in sunny situations without protection, and in winter they are kept moderately cool, and nearly without water.



[Crassulaceæ.]

A, a portion of a branch of Sempervivum villosum; 1, a calyx of S. montanum; 2, a part of the petals and stamens laid open, and adhering by the tube of the calyx; 3, a calyx with the ovaries projecting—the hypogynous scales are seen at the base of some of these; 4, a ripe follicle; 5, a section of a seed showing the embryo in the albumen.

CRASSUS, the surname of several Roman families, and especially of the triumvir Marcus Licinius. When he is first mentioned in history, he is spoken of as exceedingly rich; and it was partly owing to this circumstance that he was appointed to take the command against the revolted gladiators of Capua. In a few days he raised an army of six legions, and marched in quest of the enemy. A battle was fought in the south of Italy, near Rhegium, in which Crassus was completely victorious, and Spartacus fell with 40,000 of his men. Crassus was rewarded with an ovation on his return; but instead of the usual myrtle-wreath, he had a laurel crown. (Aul. Gellius, v. 6.) At the time of his expedition against Spartacus, he held the office of prætor; and the following year (A.U.C. 683, 71 B.C.), he was chosen consul with Pompey. The influence which Pompey gained by his popular and engaging manners Crassus succeeded in acquiring by the hospitality and munificence which his immense wealth easily supported. On one occasion he gave a general entertainment to the whole people, and distributed corn enough for three months' provision. No acts of importance, however, are recorded by historians during this administration. After some years, Crassus and Pompey dropped that determined violence towards each other, which, though frequently concealed, had never been wholly removed, and joined Cæsar in what is called the first triumvirate. While the actual power was almost entirely engrossed by Cæsar, he endeavoured to blind Crassus and Pompey to the real state of things by certain concessions which he made. With this view he included them both in a commission for dividing the lands of Campania, and for settling a colony at Capua, and thus enabled them to provide for some needy adherents to their interests. After a time the alliance was discontinued, but it was renewed again; and in B.C. 56 Pompey and Crassus offered themselves as candidates for the consulship, in order to keep out Domitius Ahenobarbus, who was violently opposed to Cæsar, and would be likely to thwart his designs. Cæsar had been appointed over the province of Gaul for five years; and Crassus and Pompey, though for some time they concealed their intentions, at last succeeded in gaining the provinces of Syria and Spain for the same period and on the same terms. Pompey did not leave immediately for Spain; but Crassus set out for Syria without delay, even before the year of his consulate was expired, B.C. 55. From the great preparations which he made, both in raising forces and in other ways, and from his known avarice, it was clear that a war with the Parthians was the real object at which he aimed; and the joy which he displayed at the prospect of so vast an increase of his wealth Appian (*on the Parthian Wars*, § 135) describes as perfectly childish and ridiculous. The tribune Ateius endeavoured to prevent Crassus from going on this expedition, but in vain; and as Crassus was passing through the gates of Rome, the tribune pronounced certain terrible imprecations upon him over a small fire, which had been lighted according to the usual practice in such cases. A person thus devoted, it was believed, could not possibly escape, and the person who so devoted another could not prosper himself, and therefore it was a course not pursued hastily or on light grounds. (Appian, § 137; Cicero *de Divinatione*, i. 16.) This consideration increased the alarm which the curse produced in the people, and even among the army of Crassus himself. Nevertheless he proceeded, by way of Macedonia and the Hellespont, to Asia. He crossed the Euphrates and ravaged Mesopotamia without resistance. Orodes, the king of Parthia, being at the time engaged in an invasion of Armenia, his general Surena commanded the Parthian forces against the Romans. A battle was fought near Carrhæ between Crassus and Surena, in which Crassus was defeated. The clamours of his soldiers obliged him to accept proposals of peace from Surena, to whom the messengers of the Parthian general promised to lead him. His resistance to their insulting treatment provoked their fury, and they put him to death without delay, B.C. 53. Surena had his head and right hand cut off and sent to Orodes.

We have no proof that Crassus possessed very great talent of any kind, and, but for his wealth, he would probably have been scarcely known. From his father he inherited a large fortune; but the rest of his wealth was not acquired by the most honourable means. He is said to have enriched himself by purchasing at a very low price the estates of those who were proscribed by Sylla; also by letting for hire slaves, whom he had instructed in various arts and trades; and so high was his own standard of opulence, that he said no one could be rich who was not able to maintain an army at his own expense. With all his avarice he was generally ready to lend money to his friends, and was hospitable without extravagance. Cicero (*Brut.*, § 66) represents him as a man of moderate acquirements and slender abilities, but of great industry and perseverance. In another of his works (*Tusc. Quæst.*, v. 40) he says, 'Crassus was somewhat deaf, but a greater misfortune than this was the bad character which people gave him, though in my opinion unjustly.' (Cicero, *Epist. ad Atticum*, i., 14, 17; iv., 13; Appian, *on the Parthian Wars*, § 134-155; Dion Cassius, xxxvi. & xxxvii.; Plutarch, *Life of Crassus*.)

[Coin of Crassus.]

British Museum. Actual Size. Silver. 61¼ grains.

CRASSUS, LUCIUS LICINIUS, was considered the greatest orator of his time. He appears to have superintended the course of Cicero's early education. (*De Oratore*, ii., 1.) Cicero, in one place (*Brut.*, § 38), pronounces him perfect, and in the treatise before referred to (*De Oratore*) he delivers his own sentiments on eloquence in the person of Crassus. In the beginning of the third book he takes occasion to lament the death of the interlocutors in the dialogue, Crassus and Antonius.

CRATÆ'GUS, an extensive genus of hardy trees and bushes, the different species of which are cultivated for the sake of their ornamental appearance, especially when loaded with brightly-coloured fruit. It belongs to the pomeous division of the rosaceous order, and is very nearly allied to the apple, from which it differs in the fruit containing a variable number of stones, as the medlar does; from the medlar it is known by its fruit being closed, not spread open, at the apex.

The species inhabit woods and hedges throughout the northern hemisphere, from Barbary and Palestine to about 60° N. lat. in the east, and from Mexico to a similar latitude in the west. South of these limits they do not occur in a wild state. The flowers appear in the greatest profusion, usually in terminal cymes, in the early months of the year, and are succeeded by small round fruits, coloured yellow, red, purple, or black. Most of them are merely haws, and fit only for the food of birds; a few are larger and more fleshy, but none of them have been found worth cultivating for the fruit, except the azarole (*Cratægus Azarolus*), which is eaten in Italy, and the aronia, which is sold in the markets of Montpellier under the name of *Pommettes à deux closes*.

Between sixty and seventy well-marked species and varieties are known in the gardens of this country. Into extensive collections they are all worth introduction except *Cr. parvifolia* and those immediately allied to it; and for the ornament of park scenery there is probably no genus of flowering trees at all to be compared with Cratægus for variety, fragrance, and beauty. Our limits prevent our noticing all these at length; we therefore confine ourselves to a brief indication of those which are most valuable for ornamental purposes.

Under the name of *Hawthorns* we would comprehend all the numerous sorts which are either varieties of *Cratægus oxyacantha*, or nearly related to it. They have all deeply-lobed rather shining leaves so little hairy that their bright green colour is not deadened, small fragrant flowers, and small shining haws. They are distinguished for the graceful manner in which they generally grow in rich soil and unharmed by the pruning-knife. Thirty feet is not an unusual height for very fine specimens, and when of that size their appearance is exceedingly graceful and picturesque. *Cr. oxyacantha* itself produces varieties with double flowers, bright crimson flowers, yellow fruit, black fruit, and fruit downy when young; the latter is called *Cr. oxyacantha eriocarpa*, and is one of the most beautiful of the genus. Besides these we would recommend most particularly to planters the *Cr. heterophylla*, or Constantinople thorn, which is more erect and rigid in its manner of growth than any of the varieties of *Cr. oxyacantha*, and grows remarkably fast.

Very nearly allied to these are the *Oriental Thorns*, species which have their deeply-cut leaves covered so closely with hairs as to have a dull grey or hoary aspect, large fragrant flowers, and large succulent rather angular fruit. These are less graceful in their manner of growth than the true hawthorns, some of them, especially *Cr. tanacetifolia* and *odoratissima* having a round formal head; but their flowers are even more fragrant than the May-bush, and their fruit renders them striking objects in the autumn. The azarole is one of them; but it does not fruit or flower readily, and is the least worth having of the group. What we should recommend are *Cr. odoratissima*, with its red, *Cr. tanacetifolia*, with its yellow, *Cr. orientalis*, with its purple, and *Cr. Aronia*, with its light orange-coloured fruit.

The *American Thorns* are species with leaves but little lobed, usually broad, shining, and toothed unequally, often having exceedingly long spines, and having fruit generally of an intermediate size. They are not quite so handsome as the species of the two former groups; but the following, nevertheless, have sufficiently ornamental features, viz., *Cr. crusgalli*, or the Cockspur thorn, with very long strong spines and shining deep-green leaves; of this we have a broad-leaved variety called *splendens*, and a narrow-leaved variety called *salicifolia*; *Cr. prunifolia*, *ovalifolia*, and *Douglasii*, with dark handsome leaves; *Cr. punctata*, with large yellow or red haws; *Cr. cordata*, with brilliant scarlet fruit, and *Cr. microcarpa*, with very small beautiful vermilion fruit and graceful pendulous shoots.

The *Small-leaved Thorns* are all North American they form small straggling bushes, and are not worth cultivation.

Finally, the *Evergreen Thorns* consist of *Cr. mexicana* and *pyracantha*. The former is a small tree, with lance-shaped bright green leaves and large round yellow fruit; it is probably too tender for hardy cultivation north of London. The latter, an inhabitant of rocks and wild places in the south of Europe and the Caucasus, has so long been cultivated for the sake of its flame-coloured berries and evergreen leaves as to require no description here.

All these plants may be budded or grafted upon the common hawthorn, so that persons whose means do not allow them to purchase the plants may nevertheless ornament their gardens with them by providing hawthorn stocks, upon which they may work them themselves; or a very small garden might exhibit a good many sorts, if each of the groups here pointed out were intermixed upon the same plant; this might be easily effected by a skilful budder. It would not, however, do to intermix the different groups upon the same plant, because the species would not harmonize, and consequently a bad appearance would be the result.

(See Loudon's *Arboretum* and *Fruticetum Britannicum*, part iii., and the *Botanical Register*, vols. 21 and 22, for more detailed information concerning these plants.)

CRA'TERUS. [ALEXANDER III.]

CRATES, the name of several Greek writers. I. A comedian of Athens, one of the most eminent of the predecessors of Aristophanes, who speaks very favourably of him. (*Eqq.* 537.) He is said to have been originally one of Cratinus' actors (Schol. on Aristoph. *Eqq.*), but he could not have been so very long, since he was well known as a comic writer in 450 B.C. (Euseb. *ad Olymp.*, 82, 2.) Aristotle tells us that he was the first who introduced regular plots into his comedies. (*Poet.* c. v.) II. A Cynic philosopher, the son of Ascondas of Thebes, who flourished about the year 328 B.C. He was living in 307 B.C., when Demetrius Phalereus retired to Thebes. (Diogen. Laërt. vi. 85; Plutarch, *Mor.*, p. 69, c.) He was a disciple of Diogenes and Bryson, and was surnamed the 'door-opener' (*θυρεπανοίκτης*) from his habit of entering any house he pleased whether invited or not. (Suidas.) III. A philosopher of the old academy, son of Antigenes, and born in the deme of Thria in Attica. He was a disciple of Polemo, to whom he was much attached, and the instructor of Arcesilaus and Bion the Borysthenite. (Diog. Laërt. iv. 4.) He flourished about the year 287 B.C. (See Clinton's *Fasti Hellenici*, ii., p. 153.) Cicero says, that his philosophical doctrines did not at all differ from those of Plato. (*Academ.* i. 9.) IV. A celebrated grammarian and stoic, son of Timocrates, and born at Mallos in Cilicia. He was sent as ambassador to Rome by Attalus, king of Pergamus, about the year 159 B.C. (See Clinton, *Fasti Hellenici*, iii., p. 89.) His works were very numerous. (See a list of them in Clinton, iii., p. 528, note e.)

CRATI'NUS, the son of Callimedes, a writer of the old comedy, was born at Athens 519 B.C. It is not known when he began to write comedies; it is inferred, however, from the words of Aristophanes (*Eqq.* 524-530), that he did not appear as a dramatist till somewhat advanced in life. (See Clinton's *Fasti Hellenici*, vol. ii., p. 49.) He was the most formidable adversary of Aristophanes: two occasions are recorded on which the judges pronounced him only second to that great poet; and in 423 B.C., the first prize was awarded to his comedy called the 'Wine-Flask,' the 'Connus' of Ameipsias being placed second, and the 'Clouds' of Aristophanes third. He died the year after. Cratinus was highly esteemed by his countrymen, and at one time, according to his rival Aristophanes, was so much in fashion, that no songs were listened to at banquets except choruses from his comedies. In his old age he was much addicted to drinking; and in his last play he shows how his faithful wife *Comedy* strove to get divorced from him in consequence of his exceeding love for his fascinating mistress the *Wine-Flask*. (See the Scholiast on Aristoph. *Eqq.* 401.) Aristophanes frequently alludes to this failing of his contemporary. (See, for instance, the *Peace*, 701.) The names of forty of his comedies have come down to us. (Fabricius, *Bibl. Græca*, ii., p. 431.)

CRATIPPUS, a Peripatetic philosopher, born at Mitylene. He was a contemporary and friend of Cicero, who thought him the first philosopher of the age (*De Officiis*, 'a Cratippo nostro, principe hujus memoriæ philosophorum'), and intrusted his son Marcus to his care at Athens. (*De Officiis*, i. 1.) He taught first in his native place, where he was still residing when Pompey came thither after the battle of Pharsalia; he had an interview with the defeated general, with whom he conversed on providence. (Plutarch, *Pomp.*, c. lxxv.) Afterwards he went to Athens, and Cicero not only got him made a Roman citizen by Julius Cæsar, but even prevailed upon the Areopagus to vote that he should be requested to continue at Athens as an instructor of youth, since he was an ornament to the city. (Plutarch, *Cicero*, c. xxiv.) Brutus went to Athens to hear Cratippus while engaged in preparations to meet the army of the Triumvirate. (Plutarch, *Brutus*, c. xxiv.) Cratippus wrote a treatise on divination, in which he allowed that kind which was derived from dreams and the ravings of idiots, but denied all other sorts of divination. (Cicero *de Divinat.* i. 3 and 32.) In addition to his merits as a philosopher, we are told that he was an amusing companion, and gifted with great powers of conversation. (Cicero *ad Familiares*, xvi. 21.)

CRAWFISH. [ASTACUS. CRUSTACEA.]

CRAYONS (from the French *crayon*, derived from *craie*, chalk) are a species of material for drawing, and may be considered as of two kinds, native and artificial. The principal native crayons are black, white, and red. The best black is procured from Italy. It is a species of earth, which is soft in the ground, but hardens on exposure to the air. It is of a bright even tint, and of a smooth and moderately hard texture. Admirably adapted to outlining and shading drawings of any size, it is the artist's best tool for study. It will form a large, bold, and strong line, and is at the same time capable of extreme fineness. The best white is a pure chalk, and is procured in France. It is of a brilliant colour, but very brittle; so that it is difficult to avoid breaking it frequently. There are various modes of correcting its brittleness, such as soaking it in milk, baking it on hot iron, or in the fire; but they all, more or less, injure the brilliancy of its tint. Pipe-clay is sometimes employed as a substitute, as being smoother and less brittle; but it is of a very inferior tint. White chalk is used on tinted paper to touch on or hatch the high lights. It is also much used by the painter to determine or correct his outline. Red chalk is employed in the place of black chalk on white or tinted paper, because it is freer than the best black chalk, and firmer and smoother than the inferior kinds. It is also of a warmer and more agreeable tone of colour; but it is by no means capable of the same degree of fineness in small or highly-finished drawings: it is a clayey ochreous substance. All these three kinds of native crayons are frequently combined in the same drawing, on tinted papers, which are generally of a neutral grey, of a blueish, greenish, or brownish quality.

Artificial crayons are composed of different coloured earths, and other pigments, rolled into solid sticks with some tenacious stuff such as milk, common gin, or beer-wort. The best are procured from Switzerland. They are employed in crayon painting upon a ground composed of paper or vellum, stretched upon a canvas, which has been previously extended on a deal frame. It is requisite to paint with cooler tints in crayons than in oils, which is the reason why crayon painters generally fall into such a cold style of colouring when they work in the other material. Great softness and delicacy and great vivacity of tint may be obtained in finished crayon paintings; but depth, richness, and truth of colour, are not attainable, nor solidity in the forms. Moreover, the delicacy proper to the substance is tolerably certain to betray the artist who devotes himself solely to its use into a petty and weak style of drawing. For sketches of portraits, in which the form and expression, and a general idea of the complexion, are all that is required, crayons are a very pleasing and useful material; but they should be employed only occasionally, and as a variety to other modes of study.

The native crayons are the legitimate materials for the artist in the study of drawing, and in tracing the first thoughts of design. Some of the sketches of Raphael, Michael Angelo, the Caracci, and others of the great painters, remain to attest the utility of crayons in forming the style of a painter or sculptor, and their capability of expressing the highest qualities of design.

An instrument called a porterayon is employed to hold the crayon by. It is a metal tube, split at each end, so as to gape a little to admit the crayon: a sliding ring embraces the tube, and may be made to close the disparted sides firmly upon the crayon.

A stump, made of leather, cork, or paper, closely rolled, or cut into a short round stick, more or less sharply pointed at each end, is used to soften and spread the chalk or crayon in the shaded parts of the drawing.

CREAM. [BUTTER.]

CREAM FRUIT, a kind of eatable fruit found at Sierra Leone, and said to be produced by some apocynaceous plant.

CREASOTE or **KREASOTE** (from *κρέας*, 'flesh,' and *σώζω*, 'to save,') is a fluid compound of oxygen, hydrogen, and carbon, obtained by Reichenbach. This substance exists in crude pyroligneous acid, but it is best prepared from that portion of the oil distilled from wood-tar which is heavier than water. The operation is too complicated to admit of its being stated at length. The properties of creasote are the following:—It is a colourless transparent fluid, and has a strong odour which greatly resembles that of smoked meat, with a caustic and burning taste. Its specific gravity is 1·037; it boils at 397°, and remains fluid at 17° below zero. It requires 80 parts of water for solution, and is soluble in alcohol, æther, and sulphuret of carbon, in all proportions. It burns with a sooty flame, refracts light powerfully, and is a non-conductor of electricity; it has neither acid nor alkaline properties. It is highly antiseptic, and hence the name given to it. It combines both with acids and with alkalis; but it is decomposed by strong nitric and sulphuric acid. It unites with chlorine, iodine, bromine, sulphur, and phosphorus.

Creasote coagulates albumen, even when much diluted, and it also coagulates serum. Meat and fish are preserved after having been brushed over with creasote and dried in the sun; the antiseptic power of pyroligneous acid and wood-smoke is supposed to be derived from its presence. A few drops added to ink are said effectually to prevent its becoming mouldy. It is stated to be composed of—

Carbon . . .	77·42
Oxygen . . .	14·46
Hydrogen . .	8·12
	100

Medical Properties.—The chemical analysis, as given above, shows this compound to contain a very large proportion of carbon; which circumstance, along with other peculiarities, renders it in certain cases a valuable medicine, and in other instances a formidable poison. The introduction, by its means, of a large quantity of carbon into the body, produces all the bad effects which an excess of that principle in the animal system is known to occasion; while in certain morbid states of the system, this increased quantity of carbon produces the remarkably sedative effect which has followed its use. There can also scarcely be a doubt but that the highly carbonized nature of this compound, along with its power of coagulating albumen, is the source of the powerful antiseptic properties which many of its combinations and solutions have been known for ages to possess. Independently of its general action on the system when taken internally, it produces, when concentrated, a local effect on the part to which it has been applied very necessary to be borne in mind, and which probably is owing to the power which creasote seems to possess of coagulating the albumen, even of living as well as of dead tissues, and which it is enabled to reach by destroying the epidermis of the part which it has been allowed to touch. Dropped upon the tongue it causes violent pain; unless largely diluted it cannot be swallowed, as, independent of the pain, it coagulates the albumen of all the fluids with which it comes in contact. Fibrine, carefully separated from other principles, is not affected by creasote.

A few drops of a very dilute solution of creasote taken into the stomach causes a sensation of warmth, and if repeated at short intervals, or the dose gradually increased, giddiness and other signs similar to those of intoxication are experienced. The urine is frequently observed to acquire a black hue, 'as if a small quantity of Indian ink had been added to it, perfectly transparent, and without sediment.' (*Medical Gazette*, vol. xvi. p. 599.) In larger doses it has all the effects of a narcotico-acrid poison, the venous state of the blood producing on the brain a markedly sedative effect, and the respiration becoming slow and laborious, or convulsive. Animals, fishes, and insects, plunged into creasote water speedily die with strong convulsions. Even plants watered with it perish, except perhaps those of the tribe Ericaceæ, which constitute the chief vegetation of bogs or mosses.

Creasote has been recommended as a remedy in very many diseases, in few of which will it ultimately be found useful. Vomiting, including sea-sickness, some forms of bronchitis, cutaneous diseases, and hæmorrhage either spontaneous or from wounds, are the only cases in which it has a claim to confidence. Vomiting, such as frequently occurs in hysterical and other persons from irritation of the origin of the eighth pair of nerves, will almost invariably be alleviated or checked; also that in sea-sickness, which proceeds from a similar cause, may be lessened, but scarcely any other kind of vomiting can be relieved by it. That form of vomiting which occurs towards the end of phthisis pulmonalis, and is connected with subacute inflammation of the stomach, is sure to be aggravated by it; as will any other, either caused by scirrhus, ulceration, or any crude indigested matter in the stomach. The utility of breathing the vapour of tar-water in some forms of bronchitis often mistaken for consumption, has been long known; but creasote can be of no service in true tubercular consumption, when cavities exist in the lungs. Creasote possesses great influence over external ulcers when it can be applied sufficiently strong to coagulate the albumen, and so form an artificial skin, under which the healing process goes on kindly. Thus in porrigo, especially ringworm of the scalp, and psoriasis, it is unrivalled. But poisoning has resulted even from its external application. Its power of coagulating the albumen of the blood renders it a most valuable styptic, and it may be employed to stop the bleeding mouths of even the largest arteries, such as the carotid, during surgical operations, or the flow of blood from leech-bites. In case of poisoning by creasote, moderate venesection and artificial respiration may be employed; the latter should be continued till by the operation of the lungs, the liver, and the kidneys, the system can free itself from the hurtful excess of carbon. The solution of creasote should always be prepared of a definite strength, to prevent unfortunate occurrences from an over-dose. Creasote is now extensively employed to preserve anatomical preparations for museums. It is likewise fraudulently added to whiskey to give the *peat-reek* flavour which many like.

CREBILLON, PROSPER JOLYOT DE, was born at Dijon in 1674, of an antient and noble family. He was sent by his father to Paris, to study the law, under a person named Prieur. The master and pupil were both attached to the theatre; and the former observing in Crebillon strong marks of a poetic genius, urged him to try his powers on a tragedy. Crebillon accordingly took the subject of the children of Brutus, which he carried to the actors, who however rejected it in a manner so little flattering to the feelings of an author, that he threw his manuscript into the fire, and gave up all thoughts of writing for the stage. Prieur would not suffer him to remain in this despondency, and the tragedy of 'Idomenée,' produced in 1707, was the fruit of his persuasions. The fifth act did not at first please the audience, but an alteration was made, and the piece was perfectly successful. In 1707 appeared his second piece, called 'Atrée,' which is founded on the horrible incident of Atreus bringing to Thyestes a cup filled with the blood of his own son. Prieur being in a declining state of health when this tragedy came out, was carried into a box: at the end of the representation he embraced Crebillon, and said: 'I die contented. I have made you a poet, and I leave a man to the nation.' The success of 'Atrée' was indeed very fair, but it was not until the production of 'Rhadamiste,' in 1711, that Crebillon's fame rose to its height, and it is on this piece that it chiefly rests. Boileau is said to have entertained a very mean opinion of 'Rhadamiste,' but this has been explained by the fact, that he had only heard the first two scenes, which are unquestionably inferior to the others. After the production of this piece, Crebillon did not much increase his reputation; his 'Xerxes' (1714), and 'Semiramis' (1717) were not very successful; and though 'Pyrrhus' (1726) was very well received, the author himself said he was surprised, as it was 'the shadow of a tragedy, rather than a tragedy itself.'

He did not bring out any other piece for twenty-two years. The death of his wife, and certain pecuniary difficulties, weighed down his spirits to that extent, that he was incapable of writing. However, at the end of that period he was allowed by the king a pension of 1000 francs, for which he was indebted to the persuasions of Mad. Pompadour, who was instigated, it is said, by her hatred to Voltaire to benefit Crebillon, as these two authors were always looked on as rivals in the drama. His tragedy of 'Catilina' was now advertised, and great were the expectations of the public; the court were determined to patronize him, and the king himself furnished the requisite dresses. It was produced in 1749, and the applause was tumultuous. The public however on reading it began to retract their hasty praise, and it was objected that the tragedy was a very unfaithful picture of the manners of antient Rome, a censure which should not be passed on Crebillon as *peculiarly* distinguishing him from other authors of his school. 'Le Triumvirat' was produced when the author was eighty-one years of age, and had but indifferent success; he also began another tragedy, called 'Cromwell,' about this time, which was never completed.

Crebillon died in the year 1762, and a monument was erected to his memory in the church of St. Gervois, by the order of Louis XV. The French actors also caused a magnificent service to be celebrated in the church of St. Jean de Latran in honour of the veteran dramatist, at which all the literati and most of the nobility of France attended.

It is on the tragedy of 'Rhadamiste' (Tacitus, *Annal.* xii. 44, &c.), that the fame of this author rests; and in spite of the various solecisms which profound critics of the French language discover in this work, the English reader will find it more to his taste than many tragedies, the names of which are more familiar to him. The plot is highly interesting, and there is a fire in the character of 'Rhadamiste,' and a matronly dignity in that of 'Zenobie,' which arrests the attention of the reader, and prevents the tedium which many English readers feel in perusing a French tragedy.

Those who wish to know more of Crebillon may read a chapter on this author in La Harpe's 'Cours de la Littérature.' The chapter is a long one, and the extracts are so copious, and the reader's attention is directed so pointedly to the remarkable passages, that he may really learn more of Crebillon by reading that critique than by perusing the author's own works.

CREBILLON, CLAUDE PROSPER JOLYOT DE, son of the preceding, was born at Paris in 1707. He wrote a number of romances, which acquired a great popularity, owing, as some say, more to their extreme licentiousness than to any intrinsic merit. His strict moral character is always brought forward as a remarkable contrast to the great laxity of his writings. He was well known as a member of two convivial societies, called the *Dominicaux* and the *Caveau*, the latter of which enrolled among its names those of Piron, Collé, and Gallet. Crebillon the younger died in 1777.

The remark that his fame is only owing to his obscenity does not to us seem wholly true. Indeed the very author of this remark (*Biog. Univ.*) makes another which tends to weaken it. He says that Crebillon is too cold a writer, and wants that warmth of colouring which is requisite to render works of a licentious nature endurable. The fact is, that his novels, in spite of their outrageous indecency, contain a most accurate picture of the motives that actuate persons in a corrupt state of society. They are rather the works of a cynic, who tears the mask off vice, than of a voluptuary, who is absorbed in its contemplation; and if we regard them in this light, their grossness may be reconciled with his strict moral character. Still however the philosophy which they inculcate is of a morbid nature (being much like that of Rochefoucault), and only those whose minds are unassailable by impurity can peruse with any profit the novels of Crebillon.

CRE'CY, or (as it is frequently written in English works) **CRESSY,** a small town (bourg) in the department of Somme, in France, on the little river Maie, which falls into the æstuary of the Somme. It is in the midst of a territory fertile in wheat and other grain, and in grass: cattle, wool, and hemp are among the articles of trade. There are several tan-yards, and oil and corn-mills. There is a considerable forest in the neighbourhood. The population of the commune as given in Prudhomme's *Dictionnaire Universel de la France*, 1804, was 1207.

Crécy is chiefly known by the great battle fought near it, August 26, 1346, between the English and French armies under their respective kings, Edward III. and Philippe VI. (de Valois). The English, who had been plundering Normandie, and had carried their ravages to the neighbourhood of Paris, were retreating when they were overtaken by the French. The force of the contending armies is usually estimated at about 30,000 English and 100,000 French: but Mr. Turner (*Hist. of England during the Middle Ages*, 2nd edit., Lond. 1825, vol. ii. p. 199) states the English army to have been as follows:—1st division, under the Prince of Wales (Edward the Black Prince), 800 men-at-arms, 2000 archers, and 1000 Welshmen; 2nd division, under the earl of Northampton and others, 800 men-at-arms, 1200 archers; 3rd division, or reserve, under the king in person, 700 men-at-arms, and 2000 archers. Allowing these numbers to have been doubled by the addition of the retainers of the men-at-arms, it will still give only 17,000 men. The English reserve was not engaged, and the king remained during the whole action at a windmill, surveying the fight and refusing to send aid, though his son, then a boy of sixteen, was hard pressed by the enemy, adding to the messenger who had entreated aid, 'Return, Sir Thomas, and tell those who sent you not to expect me while my son is alive. Tell them that I command that they let my boy win his spurs: for I wish, if God has so ordained, that the day be his own, and that the honour rest with him and those in whose care I have placed him.' The French were defeated very much through their own impetuosity and want of discipline. The butchery was dreadful, for the English, being so much inferior in number, showed no mercy. The king of Bohemia, the duke of Lorraine, the count of Alençon, brother of the king of France, the count of Flanders, eight other counts, two archbishops, and several lords and German barons, fell; and (according to the English account) 1200 knights and about 30,000 other persons. Philippe of Valois received two wounds, and was one of the last who fled. An equal or even greater number of French fell the next day in various rencontres, according to Froissart. The result of this fearful slaughter was the siege of Calais, which surrendered after a year's siege.

CREDENTIALS are the instruments which an ambassador or other diplomatic minister receives from his own government, authorizing him to appear in his diplomatic character, defining the extent of his powers, and showing to what rank of ministers he is intended to belong. The credentials are usually in the form of a closed letter, addressed to the power to which the minister is sent; but ministers are sometimes accredited by letters patent, which is the form commonly adopted when they are to be sent to a congress.

A minister cannot be received in any other character than that which is given him by his credentials; and for this reason he usually communicates their contents before he is admitted to his first audience. If he is accredited by letters patent, this is done by showing the instrument itself; but if his credentials are sealed, then by presenting a copy of them.

The powers granted by the credentials may either be confined to certain specified transactions, or extend generally to all negotiations whatever; and may, in either case, be either limited or unlimited; in which latter case the minister is styled a minister with full powers, or minister plenipotentiary. (Vattel, *Droit des Gens*, liv. iv., § 76; Klüber, *Droit des Gens moderne*, § 193, 194.

CREDIT, in Political Economy. [BILL OF EXCHANGE. CURRENCY.]

CREDITON. [DEVONSHIRE.]

CREECH, THOMAS, is the translator of Lucretius, Horace, Theocritus, and detached portions of several other Greek and Latin authors, of which a list is given in Kippis's Biographia Britannica. He was born at Blandford, in Dorsetshire, in 1659, admitted of Wadham College, Oxford (of which he appears, from the title-page of his Lucretius, to have become a fellow), in 1675, and elected probationer-fellow of All Souls' in November, 1683. He published in 1682 his translation of Lucretius, which appears, on the testimony of a violent and foolish invective against the work, to have gained much credit at Oxford, and is his best work. Dryden, who himself translated parts of Lucretius, has bestowed high praise on his predecessor. (*Preface to first part of Miscellanies.*) Creech published a Latin edition of the same author in 1695, and a translation of Horace in 1684, the latter with very indifferent success. He was appointed to the college living of Woburn, Herts, in 1699; and two years afterwards, in June, 1701, hung himself in his chamber at Oxford. His temper was very morose, which leaves room to ascribe this act to some constitutional infirmity.

CREED, from the Latin credo (I believe), the English name for those short summaries of Christian doctrine which in the continental churches are commonly called symbols, though sometimes also credos. The English church adopts, as 'thoroughly to be received and believed,' the three antient creeds, called the Apostles' creed, the Athanasian creed, and the Nicene creed; but it does not assert any of them to be inspired, nor does it even affirm the first-mentioned to have been actually drawn up by the apostles; it only says of them generally that 'they may be proved by most certain warrants of holy Scripture.' (Art. viii.) The Catholic church adopts along with these what is called the creed of the council of Constantinople, which contains some addition to what is said in the Nicene creed on the subject of the divinity of the Holy Ghost. Many other similar formulæ have been received at different times in particular churches.

CREEK is a small inlet on a low sandy coast. Such inlets occur also frequently in harbours inclosed by a low shore and along the banks of rivers. Sometimes, especially in harbours, creeks are formed by the mouths of small brooks and rivulets. In large rivers creeks are resorted to by small craft as harbours or landing places, and they are often visited by fish in spawning time. In the United States the name creek is very generally applied to small *inland* streams, which in England would be called brooks or rivers.

CREEK INDIANS were, at the beginning of the present century, one of the most powerful native tribes within the limits of the United States of America. They occupied nearly all the countries lying north of 31° N. lat. between the Flint river, the eastern branch of the Chatahoochee, and the Tombigbee or western branch of the Mobile river, and did not permit Europeans to settle west of the Flint. They then occupied a large part of the state of Georgia, and more than half of that of Alabama. In 1802 and 1805 they ceded the north-western portion of their territories to the United States; but in 1813 they joined their arms with those of the Spaniards in Florida against them, and were only defeated and subjected by a very destructive war in 1814. Though their number was much reduced by this war, it was still estimated at 20,000, of which number about one-fourth were warriors. At this period they were obliged to give up all the countries west of the river Coosa, a branch of the Alabama. In 1826 those of them who inhabited that portion of Georgia which lies between the Flint river and the Chatahoochee sold their lands and retired to the banks of the Arkansas, where a tract of land was assigned to them by the general government. Many of them are said to have emigrated to the Mexican state of Texas. Of their former territories the Creeks occupy at present only the north-eastern corner of Alabama, together with a small number of Cherokees. They have made considerable progress in civilization, having entirely abandoned a wandering life, and inhabiting fixed places. They have large flocks of cattle, and cultivate grain, maize, potatoes, and some roots and vegetables: they also have different kinds of domestic manufactures. They have schools established among them. Their language is a dialect of the so-called Floridian language, which is spoken by all the tribes south of the Tenessee river, and as far west as the Mississippi. The Seminole Indians in Florida are called Lower Creeks. The name Creeks was given to them by the first settlers. They call themselves Muskogees.

CREEPER (Zoology). Creeper-family, *Certhiadæ*. A family of birds placed by Mr. Vigors under his order *Scansores* or *climbing birds*. 'The genus *Certhia*,' writes that author (*Linn. Trans.*, vol. xiv., p. 461), 'as originally instituted by Linnæus, contained, besides the true *Certhia* and its congeners which form the extreme family of the preceding tribe (*Picidæ*), all those birds whose slender and gradually curved bills and delicate formation of body, added to their practice of employing their tongues in taking their food, indicated a strong affinity to each other, and which have since been particularized by authors under the various names of *Nectarinia*, *Cinnyris*, *Drepanis*, &c. To the group thus known and described by the Swedish naturalist, later ornithologists, who have strictly followed his steps, have added another, discovered since his time in Australasia, similar in habits and manners, and now distinguished by the generic title of *Meliphaga*. The whole of the birds, however, thus united by close affinities, and as such generally brought together by systematic writers into one conterminous series, are decidedly divisible into two distinct groups, naturally arranging themselves under different subdivisions of the order. The family of *Certhiadæ*, as we have seen above, live upon animal food; while the remaining genera of the Linnæan *Certhia* subsist chiefly upon vegetable juices. The tongues of each, though similar in being more or less extensible, and in being the medium through which they are supplied with food, are equally distinct as the nature of the food itself. Those of the former are sharp, and of a spear-like form, as if to transfix the insects which are their prey; while those of the latter are divided into tubular filaments, which appear exclusively adapted to the purposes of suction. In other particulars they exhibit an equal difference. The *Certhiadæ* climb, and their feet are of a conformable structure; but the feet of the *suctorial birds* are not only in general unsuited to that purpose, but they become gradually weaker, and of less use as they come nearer the type of the tribe, where they are so short and slightly formed, as to be serviceable only in perching, when the bird is at rest. . . . . The two groups of the Linnæan *Certhia* are disposed in the separate departments to which the distinct nature of their food and habits more immediately unites them; while at the same time, by their forming the extremes of their respective tribes, and touching each other at the corresponding points of the circles in which they are arranged, their obvious affinities are preserved inviolate.'

Having thus shown that, according to Mr. Vigors, the *Certhiadæ* on one side lead the way to the Tenuirostral group, we must go back a little to make the reader acquainted with its true place, in the opinion of Mr. Vigurs, among the Scansorial birds. The strong affinity, he observes, between the *Picidæ* (wood-peckers) and the *Certhiadæ*, in their general habits of climbing and of feeding by their extensile tongue, needs no illustration. The difference in the form of the typical bill of *Picus*, and that of the true *Certhiæ*, the former straight and powerful, the latter curved and slender, is softened down by the intervention of the genus *Dendrocolaptes*, Herm., which, as it stands at present, includes some groups (*Dendrocolaptes Picus*) where the bill is as strong and as straight as in *Picus*; others (*D. scandens*), where the bill, still retaining its strength, becomes gradually curved; and others (*D. procurvus*), where the bill still further deviating from the type of the genus to which it belongs, assumes the full curve and slenderness of the bill of the typical *Certhiæ*. The Linnæan *Pici*, he remarks, include some species where the bill loses the straight and angulated form, and becomes curved and compressed; and these, of which *Picus auratus*, Linn., is the representative (*Colaptes*, Swainson), show in this particular a clear approximation to the true *Creepers*; while the latter exhibit an equal contiguity to the former, in some of the aberrant groups of the family, which retain the stiff shafts of the tail-feathers so remarkable in the true *Pici*. The conformation of the foot of the *Certhiadæ*, shows a deviation from the perfect structure of the more typical *Scansores*, distinguishes them as an aberrant group of the tribe, and calls for a separation. In the *Certhiadæ* the foot is not strictly scansorial; but though they have not two posterior toes like the *Picidæ*, the single hind toe of the *Certhiadæ* is considerably longer and stronger than it is in the generality of *Perchers*.

'In addition,' continues Mr. Vigors, 'to *Dendrocolaptes*, already mentioned, and the true *Certhia* of the present day, the family before us consists of a variety of genera strongly united by their corresponding habits. Among these, *Climacteris*, Temm., and *Orthonyx*, Temm., preserve the strong shafts of the tail-feathers, which are carried on to them from the true *Pici*. This construction gradually disappears in the remaining groups of the family; but the strong hind toe, and the tongue more or less extensile, and serving to spear their prey, is still conspicuous. Among such groups we may particularize the *Tichodroma*, Ill., and *Upupa*, Linn., together with the Linnæan *Sitta*, and the conterminous form of *Xenops*, Ill. Here also may be associated the *Opetiorhynchus* and *Anabates* of M. Temminck, as also the *Oxyrhynchus* of the same author. This genus may be observed to be connected with those groups of the present family which are united with the genus *Yunx* of the preceding; it is a perfect *Wryneck*, as justly asserted by M. Temminck, with a *Creeper's* foot. I wish not, how ever, to enter into the affinities of these groups. We know but little of them as yet: and every day is bringing in fresh subjects, and fresh information on a department of the class which has hitherto, I know not why, attracted but little attention.'

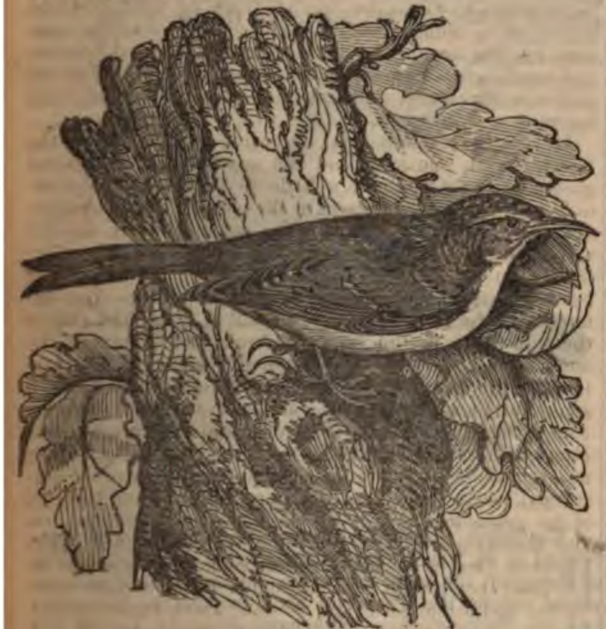
Mr. Swainson (*Fauna Boreali Americana*, vol. ii.) places the genus *Troglodytes* (wrens) among the *Certhiadæ*, which family he also places under the *Scansores*.

Cuvier, the Prince of Musignano, and Lesson, arrange the *Certhiadæ* under the *Tenuirostres*, and the following are the genera which M. Lesson enumerates.

Family character.—Bill sometimes very much curved, sometimes but little, sometimes nearly straight, rounded, slightly compressed, pointed; *tongue* simple, cartilaginous at the extremity; *tail-feathers* generally worn at the end. (Lesson.)

Genera. Certhia.

Bill moderately long, more or less curved, triangular, compressed, slender, pointed; *nostrils* basal, partially closed by a membrane; *wings* short, fourth quill longest; *tail-feathers* stiff, a little curved, pointed at the end. Example, *Certhia familiaris*, Linn.



[Certhia familiaris.]

Description.—Bill about half an inch long, slender and curved; head and neck above, streaked with black and yellow-brown; a white line above each eye; irides hazel; back, rump, and scapulars approaching to tawny; quills dusky, tipped and edged with white or light brown; coverts dusky brown and yellowish-white, producing a variegated appearance; a yellowish-white bar across the wing; breast and belly silvery white; tail-feathers twelve, tawny brown; length rather more than five inches; weight about two drams (Montagu), Pennant says five drams.

The *Creeper, Common Creeper, Tree-creeper* and *Tree-climber, Certhia familiaris*, Linn., is, according to Belon and others, the Κέρθιος (*Certhius*) of Aristotle (book ix., c. 17); it is *Le Grimpereau* of the French; *Picchio piccolo, Picchietto, Rampichino* and *Piccio rampichino* of the modern Italians; *Baumlaufer, Kleinere Grau-Specht*, or *Kleinste Baum-Häcker* of the Germans; *Krypare* of the 'Fauna Suecica;' and *y Grepianog* of the antient British.

Habits.—The creeper is a most restless and active little bird, ever on the alert, and climbing up and about the trunks and branches of trees intent on picking up its insect food. Though comparatively common, and a constant resident in Britain, it is not easily seen; for its activity in shifting its position makes it very difficult to follow it with the eye. At one instant it is before the spectator, and the next is hidden from his view by the intervening trunk or branch to the opposite side of which it has passed in a moment. The form of the tail and organization of the feet are beautiful adaptations for this sort of rapid locomotion. Its note is monotonous, and often repeated.

Nest in the hole or behind the bark of decayed trees, formed of dry grass, and the inner part of the bark, lined with small feathers, in which six or eight eggs are deposited: while the female sits on these she is regularly fed by the male bird.

Geographical Distribution.—Britain and the Continent of Europe. Pennant says, that it migrates to Italy in September and October. Latham states, that it is found in various parts of Germany and elsewhere on the Continent, and is also said to inhabit North America. This is confirmed by the Prince of Musignano, who, in his *Specchio Comparativo*, notes it as common and permanent near Rome, and rare near Philadelphia.

Temminck is of opinion that the *Certhia brachydactyla* of Brehm is identical with *Certhia familiaris*.

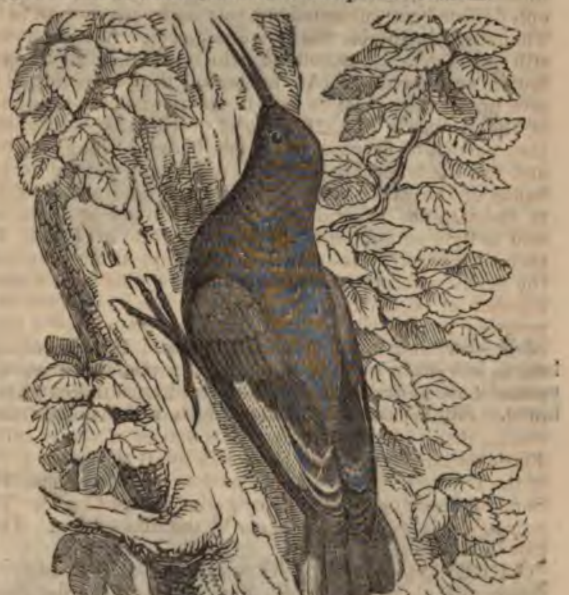
Tichodroma (Petrodroma, Vieill.).

Bill longer than the head, triangular at the base, slightly bent, rounded, entire, and depressed at the point; *nostrils* horizontal; *tail-feathers* nearly equal, with ordinary shafts; *wings* long, fourth, fifth, and sixth quill the longest. Example, *Tichodroma muraria*, C. Bonap.; *Tichodroma phœnicoptera*, Temm.; *Certhia muraria*, Linn.

Description.—Summit of the head of a deep ash colour; nape, back, and scapulars bright ash; throat and front of the neck deep black; lower parts blackish ash; coverts of the wings and upper part of the exterior barbs of the quills bright red; extremity of the alar quills black: these quills have two large white spots disposed upon the interior barbs; tail black, terminated with white and ash; bill, iris, and feet black; length six inches six lines. Such is Temminck's description of the male in its nuptial or spring dress.

The female, according to the same author, has the summit of the head of the same bright ash as the back; the throat and front of the neck white, slightly tinged with ash; and the rest of the plumage like that of the male.

This bird is the *Grimpereau de muraille, Pic de muraille, Ternier, Eschelette* and *Echelette* of the French; *Picchio muraiolo* and *Picchio di muro* of the Italians; *Mauer Baum laufer* of the Germans, and *Wall-creeper* of Latham.



[Tichodroma muraria.]

Geographical Distribution.—South of Europe. Tolerably abundant in Spain and Italy, always on the most elevated rocks, and very rare in the mountains of moderate height. Never found in the north, according to Temminck. The bird is common in Provence; and the Prince of Musignano notes it as permanent and rather rare near Rome, where it may, however, be seen creeping on the outward walls of St. Peter's. It is not a British bird, at least it has never been recorded as such.

Habits, Food, Nest, &c.—Temminck says that what the *Creeper* does upon trees the *Wall-creeper* does against the vertical faces of rocks, on which it sticks firmly (se cramponnent fortement), without, however, mounting and descending by creeping. Clefts and crevices of rocks and the walls of old edifices are its favourite haunts, and sometimes, but very rarely, the trunks of trees. It *feeds* on insects, their larvæ and pupæ, and is particularly fond of spiders and their eggs. Belon has figured his example clinging to a pillar with a spider in its bill. The nest is made in clefts of the most inaccessible rocks and in the crevices of ruins at a great height.

The bird moults twice a year. It is in the spring only that the male has the black on the throat, and this ornament disappears before the other feathers fall. The females moult also twice, but without changing colour, which makes it impossible to distinguish the sexes after pairing and breeding time. The young may be distinguished from their parents before their first moult, but in winter no difference is observable. (Temminck.)

Dendrocolaptes (Dendrocopus, Vieill.)

Bill long or moderate, compressed laterally, rather strong, convex, straight or curved, or only curved towards the extremity, pointed; *Nostrils* lateral, round, open; *Tongue* short and cartilaginous. Third, fourth and fifth *quills* the longest. *Tail-feathers* stiff, pointed. Hind *toe* shortest; claws very much curved, channelled. Example, *Dendrocolaptes procurvus*, Temm. *D. trochilorostris*, Wied. Locality, Brazil.

Description.—Size of the blackbird. Bill strongly curved and nearly twenty lines long. Tail graduated and each feather terminated by a stiff point. General colour cinnamon, passing into dirty ruddy grey on the head and belly. There are numerous white spots on the head and neck.

[Dendrocolaptes procurvus.]

Climacteris.

Bill short, weak, very much compressed throughout its length, but little curved, oval-shaped; mandibles equal, pointed; *Nostrils* basal, lateral, covered by a naked membrane. *Feet* robust; tarsi of the length of the middle toe, which, as well as the hallux, are extraordinarily long; claws large and curved, channelled on the sides, subulate, very much hooked; external toe united up to the second articulation, the internal toe as far as the first; lateral toes very unequal. *Wings* moderate; first quill short, second shorter than the third, which last and the fourth are the longest. (Temminck.) Example, *Climacteris Picumnus*.

[Climacteris Picumnus.]

Description.—Summit of the head deep-grey; nape and neck bright grey. Wings and two middle feathers of the tail brown; a large nankeen-coloured band passes nearly through the middle of the quills. Tail-feathers black, except at their origin and extremity. Throat and cheeks dirty white. Breast grey. Feathers of the lower parts white in the middle, bordered with brown. Lower coverts of the tail Isabella-colour, marked with transverse brown spots. Length six inches six lines. (Temm.) Locality, Timor, Celebes, and the North coast of Australia.

This genus bears a strong relation to the *Soui-mangas.*

Furnarius (Opetiorhynchos), Temm. Figulus, Spix.

Bill shorter than the head, as wide as it is high, compressed laterally, but little curved, entire, pointed; *Tongue* moderate, straight, worn at the point. *Wings* feeble. (Vieillot.) Type, *Merops rufus*, Gmel. Example, *Furnarius fuliginosus*, Lesson. *Certhia antarctica*, Garnot.

[Furnarius rufus.]

‘The genus *Furnarius*, writes M. Lesson, ‘was established by M. Vieillot for the reception of some small birds of Paraguay, the most celebrated among which have been placed among the Thrushes, the Creepers, the Bee-eaters and the Promeropidæ. The most antiently known, the *Fournier* of Buenos Ayres (*Merops rufus*, Gm. *Figulus albogularis*, Spix), is often noticed on account of the manner in which it constructs its nest, viz.: in the form of an oven (*four*), whence comes its name. On this point we know nothing of the habits of the *Fournier brun*, which lives in South America, and which approaches much in other respects to *Merops rufus*, figured by Commerson under the name of *Hornero Bonariensium* and of *Turdus furnifaber*, and which is said to be an object of veneration at La Plata. As it ought to be, the genus *Furnarius* should only contain the three species indicated by D'Azara, and that which we add under the name of *Furnarius fuliginosus*.

‘This bird is five inches and a half in length; the bill is eight lines long, the tarsi an inch, and the tail two inches eight lines. The bill is slightly compressed, convex above, with the upper mandible slightly curved, entire, and exceeding the lower one. The tail is nearly rectilinear, composed of twelve feathers. The legs are feathered down to the tarsi, which are slender, elongated, with large but little apparent scutella. The middle toe is longest; the two outside ones nearly equal in length, and the external toe is united with the middle toe at its base. The claw of the posterior toe is double the length of the anterior toes, which are very much compressed at the sides, curved, and pointed. The entire plumage of the bird is a clear fuliginous brown spread equally over all the parts of the body, the neck alone exhibits yellow and brown ill-defined striæ. The under side of the tail is of a bright grey-brown. A yellow band of deeper tint occupies the middle of the great quills, and forms a kind of scarf when the bird is in flight; the extremity of the quills is a little deeper than the rest of the plumage, and their external border is a shade brighter.' (Lesson.)

Locality.—*Furnarius fuliginosus* inhabits the Malouine islands. It lives upon the beach, where its familiarity and fearless disposition permits approach till it may be almost touched with the hand. Its sombre plumage has caused it to be mentioned under the name of *Merle* in the narratives of some voyages. Pernetty, who sojourned at the Malouines, thus describes it: 'This bird is so tame that it will almost fly upon the finger; in less than half an hour I killed ten with a small switch, and almost without changing my position. It scratches in the goëmons (*fucus*) which the sea throws upon the beach, and there eats worms and small shrimps, which they call sea-fleas (*puces de mer*).' 'Its flight is short. When disturbed it contents itself with flying two or three paces farther off. Its habits are solitary.' (Lesson.)

Cœreba.

(See Nectarinidæ.)

Dicæum.

Bill pointed, bent, of the length of the head, depressed and widened at the base.

The species forming this genus, instituted by Cuvier, are small, oriental, have more or less of scarlet in their plumage, and differ from the true *Certhiæ*, inasmuch as their tails are not worn, nor do they creep. It is questionable whether they do not belong to the *Nectarinidæ*; but their position will principally depend upon their habits and the form of their tongue. Cuvier places the genus next to *Le Fournier* (*Merops rufus*) and under *Nectarinia*.

[Dicæum erythronotus.]

CREES and Chippeways. These constitute at present one of the most numerous and most widely extended of the aboriginal nations which inhabit the interior of North America. The Crees, formerly called by the French Knistineaux, inhabit the shores of Hudson's Bay from Moose River, which falls into the south-western corner of James Bay, to the mouth of Churchill River (about 59° N. lat.), and hence they extend westward to the Athabasca Lake, and to the plains which lie betwixt the forks of the Saskatchewan, near Carlton House. They do not extend to the Rocky Mountains, the plains lying along the base of this range being in possession of a branch of the Assinneboin Indians, who are of the Sioux stock, and speak the language of the Iroquois or Hurons. The Chippeways inhabit the country about Lakes Michigan, Huron, and Superior. But it seems that many other tribes belong to the same stock as the Crees; for all the nations which are within the limits of the United States north of the Ohio and east of the Mississippi speak languages which may be considered only as dialects of that spoken by the Crees and Chippeways. [Algonquins.]

The Lennapi, one of these tribes, have a tradition amongst them, that 'their ancestors, coming from the westward, took possession of the whole country from the Missouri to the Atlantic, after driving away or destroying the original inhabitants of the land, whom they termed Alligewi. In this migration and contest, which endured for a series of years, the Mengwe or Iroquois kept pace with them, moving in a parallel but more northern line, and finally settling on the banks of the St. Lawrence and the great lakes from whence it flows.' (Richardson *in Franklin's First Journey*.)

M'Keevor gives the following description of this race:—'They are, for the most part, tall, large-boned, and long-visaged, with very prominent features; the eye is penetrating, and of a deep black colour; the nose prominent, of an aquiline shape, not at all flattened; the forehead is short and straight; mouth large, but lips not at all everted; hair uniformly of a shining black, straight and coarse, having no disposition whatever to curl. When viewed in profile, the parts appear more deeply and distinctly marked than in the Esquimeaux. The ear is not placed so far back on the head, nor is the space between the eyes at all so great as in the last-mentioned nation. The general expression of the countenance is gloomy and severe. They have little hair on their chin or upper lip, owing to its being eradicated immediately on its first appearance. The females differ considerably both in person and features from the men, being short, small-boned, with the face approaching more to the rounded form. They have, for the most part, an expression of mildness and sweetness in their looks.'

The Crees, like the other tribes of North America, live upon the produce of the chace and the fisheries in the numerous lakes and rivers by which their country is watered. No kind of agriculture has been introduced among them, as among those tribes that inhabit the southern portions of the United States. This is chiefly to be ascribed to the general sterility of the countries which they inhabit, and partly to the rigour of the climate. Even in the European settlements no attempt to sow and plant has been made north of Carlton House, on the Saskatchewan, and at the latter place only on a small scale. The hardships to which their manner of life frequently exposes them, and the want of food for some weeks together, sometimes compel them to commit cannibalism. Instances of this kind are on record, even of parents having fed on their own children; but these extreme cases are of rare occurrence. They commonly evince a strong affection for their offspring, and bewail for a length of time the loss of their relations.

Europeans are very little acquainted with the language of the Crees. M'Keevor has added a short vocabulary to his voyage. Dr. Richardson collected a copious and valuable vocabulary, which is still unpublished. Mr. J. Howse of Cirencester, who was in the service of the Hudson's Bay Company for twenty years, is now preparing, under the sanction of the London Geographical Society, a grammar of the Cree language, which will, we feel confident, throw a new light on the structure of the Cree and all the cognate languages of the North American continent. (Hearne, Richardson, M'Keevor, *Voyage to Hudson's Bay*.)

CREFELD, a minor circle in the Prussian province of Düsseldorf, lying on the left bank of the Rhine, and bounded on the north and west by the province of Cleves. Its area is about 88 square miles; the surface is completely level, and the soil, though in parts light and sandy, is productive, and very favourable for the cultivation of rye, oats, and buckwheat, flax and fruit. The Rhine skirts it in the east, and the Nierse in the west. The arable land consists of about 45,000 acres, which form above three-fourths of the whole surface. Agriculture is the chief employment of the inhabitants; and next to this the rearing of cattle, and manufacturing, which last is principally carried on in and about the town of Crefeld. The circle contains three towns (Crefeld, 19,000 inhabitants; Uerdingen, 2200; and Linn, 980), twenty-two villages, and twenty-one hamlets. The population was in 1816, 32,069; in 1826, 35,446; and in 1831, 37,611.

CREFELD, the chief town of the circle, lies in a low marshy situation, and was surrounded with walls and ditches as early as the year 1373; 51° 20′ N. lat., and 6° 32′ E. long. It is well and regularly built, and being encircled by gardens and country seats, is one of the prettiest spots in this part of Germany. The houses are about 1600 in number, and the inhabitants about 19,000: in 1784 they were 5800, in 1816, 9839; and in 1831, 18,738. The town contains a Roman Catholic church, two Protestant churches, a synagogue, and a place of worship for the Mennonites, of whom there are about 800; an orphan asylum, hospitals, a house of correction, and a school in which girls are taught all kinds of female labours. The manufactures to which Crefeld is indebted for its prosperity were set on foot by the Protestants, who sought refuge here from religious persecution at the end of the seventeenth and beginning of the eighteenth centuries. The chief branches of these manufactures are silks and velvets; they are carried on both in the town and its immediate neighbourhood, and afford employment to upwards of 6000 hands; their produce is estimated at more than 500,000*l.* a year. The other branches of manufacture are cotton-yarn, woollen cloths, and kerseymeres, flannel, stockings, linens, hats, gloves, thread, refined sugar, tobacco, soap and starch, looking-glasses, sheet-iron, iron and copper wares, and felt for hats. The trade of Crefeld is brisk and extensive, particularly in its own products, and it has three good fairs in the course of the year.

CREMA, the town of. [LODI.]

CREMNITZ (Hungar. Kërmöcz-Bánya), a mining-town in the northern part of the county of Bars, in Hungary, situated in a narrow gloomy valley, closed in by seven high hills. It is a royal free town, and the place where the earliest mines in the kingdom were opened; 48° 42′ N. lat. 18° 53′ E. long. The inner town, even with the castle, contains only 39 houses, but its suburbs are extensive and add 582 more to the number. The population is about 5500, mostly Germans or Sclavonians, who derive their subsistence from the adjacent mines. Among the buildings of note are the archiepiscopal residence, the principal church, with two lofty richly-gilt steeples and a coppered roof, built by the townsmen in 1461, four other churches, the chancery, mint, town-hall, royal gymnasium, Roman Catholic high school, royal hospital for the miners, an hospital for the townspeople, and a convent. It is the seat of a subordinate board of mines, and coins the celebrated Cremnitz ducats. The royal mines in the neighbourhood produce gold, esteemed the finest obtained in Europe, and silver, and employ between 800 and 1000 workmen. The waters of these mines contain a large quantity of sulphate of iron. The smelting-houses on this spot smelt not only all the ores found here, but what the Schemnitz and Kieschlich mines yield. The produce of the Cremnitz mines has greatly fallen off of late years. The town contains a Normal school, a Lutheran school; two paper-mills, and a manufactory of earthenware and of red lead. It is the most antient free town in Hungary.

CREMO'NA, the province of, in the Lombardo-Venetian kingdom, is bounded to the north by the province of Brescia, east by that of Mantua, south by the Po, which divides it from the Duchy of Parma, and west by the province of Lodi. Its length is about 40 miles from north-west to south-east, and its breadth is about 15. The Po, the Oglio, and the Adda are the principal rivers of the province. It is entirely a country of plains, forming part of the great level of Lombardy.

It is divided into nine districts, which are subdivided into 187 communes, with a population, in 1835, of 184,987 inhabitants, being an increase of 835 upon that of the year 1834. (*Bollettino Statistico di Milano.*) The districts are: Cremona, Soncino, Soresina, Pizzighettone, Robecco, Pieve d'Olmi, Casal Maggiore, Piadena, Pescarolo. The country is very productive in corn, flax, wine, oil; it also produces silk, cheese, honey, and wax. There are in the province 148 elementary schools for boys, attended by 7353 pupils; and 39 female schools, attended by 2339 girls. (*Report of* 1833.) At Cremona and Soresina are two female colleges for secondary instruction. At Casal Maggiore is a private establishment for secondary education for boys, and at Cremona a gymnasium and a royal lyceum. The Po and the Oglio being subject to overflowings, considerable sums are spent yearly by the treasury in repairing the embankments. The communal or cross roads constructed or repaired in the province cost, in 1831, the sum of 113,142 livres; in 1832, 191,838 livres; and in 1833, a sum of 129,219 livres. The two principal towns of the province, besides the capital, are Casal Maggiore, with about 4000 inhabitants, and Pizzighettone, a fortress of considerable strength on the east bank of the Adda.

CREMO'NA, the capital of the province, and a bishop's see, 45 miles south-east of Milan, is situated on the north bank of the Po, and surrounded by walls flanked with towers and wet ditches. A navigable canal, which communicates between the Oglio and the Po, passes through the town. The Po is navigable for large boats from Cremona to the sea. The town is five miles in circumference, but its population is not more than 26,000, and consequently many of its streets, which are mostly regular and tolerably wide, appear desolate. Cremona has many good buildings, such as palaces and churches. The façade of the cathedral, which is a Gothic building, is ornamented with curious sculptures representing the signs of the zodiac and the rural labours of the various seasons. The interior is rich in paintings of native masters, Moretti, Malosso, Boccacino (who is styled the Raphael of Cremona), Sojaro, &c.; and also in sculptures, especially by Sacchi, a Cremonese artist of the thirteenth century. The other remarkable churches are S. Nazario, which contains some master-pieces of the brothers Campi, distinguished painters of Cremona; S. Pietro al Po, S. Abbondio, S. Lorenzo, Sa. Pelagia, also possess paintings of the Cremonese school. At Sa. Pelagia are two inscriptions in honour of Girolamo Vida, a distinguished prelate of the age of Leo X., who was a native of Cremona. Vida, who has been praised by Ariosto and by Pope, is the author of a Latin poem on the life of Jesus Christ, from which Tasso has not disdained to borrow some fine passages of his Jerusalem, and also of an 'Ars Poetica,' a didactic poem, which is much esteemed. The townhouse on the great square, the new market, the theatre, and some of the gates of the town, are worthy of notice. But the famous tower or belfry ending in a spire, which is one of the loftiest in Italy, is the wonder of Cremona: there are about 500 steps to ascend up to the bells. The spire is a conspicuous object for many miles around in the plains of Lombardy. About one mile outside of the town is the church, formerly an abbey, of S. Sigismondo, founded by Francisco Sforza I., duke of Milan, who married here Bianca Visconti: it is full of paintings. (Panni, *Rapporto delle Pitture che trovansi nelle Chiese della Città e Sobborghi di Cremona.*) There are also in Cremona some private galleries of paintings, of which that of Count Ponzoni is the principal. Cremona is the residence of the delegate or governor of the province. It has civil, criminal, and commercial courts, a lyceum, and a gymnasium, and a school of the fine arts. It is also the first city in Italy where infant schools were established in 1829, through the exertions of a philanthropic clergyman, Abate Aporti. Being encouraged by the local authorities as well as by the Austrian government of Lombardy, these schools are spreading to Brescia and other provinces. In the town of Cremona there are several infant schools: one is mentioned in which the pupils pay from two to three livres a month, and which is attended by 80 or 90 children; two others are gratuitous or charity schools, in which about 340 children of both sexes and of poor parents are instructed, and have their dinner given to them. (*Bollettino Statistico*, 1834.) Children remain at school from morning till night; they are admitted from two to six years of age, after which they go to the public elementary schools. Their physical as well as intellectual, moral, and religious education is attended to. Aporti has published an interesting account of these institutions, with the method of instruction pursued in them, a catechism, &c.: *Manuale d'Educazione ed Ammaestramento per le Scuole Infantili*, Cremona, 1833. A notice of Aporti's labours appeared in No. XIX. of the *Journal of Education*, 1835. There are also holiday schools at Cremona and in various parts of the province, in which boys above twelve years of age who have left the elementary schools receive instruction, especially in the branches of knowledge connected with the mechanical arts, such as drawing, &c. These schools are open at certain hours on Sundays and other holidays which are kept in Catholic countries.

Cremona carries on a considerable trade in agricultural produce by means of the Po and the various canals communicating with that river. It has manufactures of silks and cottons. It was once celebrated for its violins and musical strings, but that branch of industry appears to have greatly declined. The high road from Milan to Mantua and Venice passes through Cremona.

Cremona was in the territory of the Galli Cenomani. It was colonized by the Romans under the consuls T. Sempronius and P. Cornelius, at the time when Hannibal was marching against Italy (Tacitus, *Histor.*, iii. 34) as a place of defence against the Gauls and other enemies from the north. It became a populous and flourishing town. In the civil wars of the triumvirate it was plundered by the soldiers of Octavianus, and its fertile fields were divided among fresh colonists, the former owners being driven away, a calamity pathetically alluded to by Virgil in his Bucolics and Georgics. Virgil was born at Andes, between Cremona and Mantua. In the war between Vitellius and Vespasian the citizens sided with the former, upon which the victorious army of Vespasian having entered the town, plundered and burnt it. Tacitus (*Hist.*, iii.) has given a fearful account of that catastrophe. Cremona was restored by Vespasian. After the fall of the empire, it underwent the same vicissitudes as the other cities of Lombardy: it suffered severely at the hands of Frederic Barbarossa, was afterwards distracted by the Guelf and Guibeline factions, had its petty tyrants, and at last fell under the dominion of the Visconti of Milan, since which time it has continued to form a part of the Milanese state. (F. A. Zacharia, *Cremonensium Episcoporum Series cum Dissertatione de Cremonæ Origine, Amplitudine, &c.*, 4to, 1749.) The literary history of Cremona has been written by Arisio, *Cremona Literata*, 2 vols. fol., 1702-6.

CREMO'NA, a general name given to violins made at Cremona in the seventeenth century by the Amati family, and by Stradiuarius at the commencement of the eighteenth. These instruments excel all others, and the choicest of them bear very high prices. [VIOLIN.] Cremona is a name erroneously given to a stop in the organ; it ought to be Krumhorn, a sort of cornet, of which it is intended to be an imitation.

CRENA'TULA. [MALLEACEA.]

CRENILA'BRUS (Cuvier), a genus of fishes of the section Acanthopterygii and family Labridæ. The species of this genus have all the general characters of the true *Labri*, or *Wrasses*, but are distinguished by their having the margin of the preoperculum denticulated: the cheeks and operculum are scaly.

Four species of this genus have been found off the British coast, of which the common one, *Crenilabrus tinca* (*Labrus tinca* Linnæus), is called the Gilt-head, Connor, Golden Maid, &c. This fish is found on various parts of the coast; it is about six inches in length, and the depth is nearly one-third of the length. The general colour of the body is obscure red and green; these colours are arranged in longitudinal stripes on the upper parts, and beneath the lateral line the red is disposed in spots. The Gilt-head mostly frequents deep water, where the bottom is rocky; its food is chiefly Crustacea.

Crenilabrus cornubicus (the Goldfinny or Goldsinny) somewhat resembles the last, but may always be distinguished by a black spot on each side near the base of the tail, and situated on the lateral line; its general colour is yellowish green, darkest on the back; the sides are usually adorned with longitudinal lines of a deeper hue. Length about three or four inches.

Crenilabrus gibbus (the Gibbous Wrasse) may be readily distinguished from either of the known British species of this genus by its comparatively shorter and more elevated form. The depth of the body is considerably more than one-third of the length: the colours are chiefly orange and blue; the gill-covers and sides of the body are spotted, and the back is striped. The ventral fins are green, the pectorals are yellow, with transverse red stripes at their base.

Pennant obtained a specimen of this fish off the coast of Anglesey; and this is we believe the only instance on record of its capture off the British coast.

Crenilabrus luscus (the Scale-rayed Wrasse) has been once caught off the coast of Cornwall: the specimen was twenty-two inches in length. The tail is round, and consists of fifteen rays; 'between each ray of the dorsal, anal, and caudal fins, is a process formed of firm, elongated, imbricated scales. Colour, an uniform light brown, lighter on the belly; upper eye-lid black; at the upper edge of the base of the caudal fin is a dark brown spot. Pectorals yellow; all the other fins bordered with yellow.'

CREOLES, a word originally Spanish, and used to designate the children and descendants of European parents, who were born in the South American or West Indian Colonies, as distinct from the resident inhabitants born in Europe, as well as from the offspring of mixed blood, such as the Mulattos and Mestizoes, born of negro or Indian mothers. The Creoles of Spanish America were for a long time inadmissible to civil and political offices as well as to the higher ranks in the army; and even after Charles III. removed their disqualifications, they were still considered as inferior to the native Spaniards. This state of humiliation contributed perhaps as much as the climate to render them lazy and indolent. The insurrection of the Spanish colonies made the Creoles masters of the country, from which the native Spaniards were mostly driven away. In the West India Islands the Creoles are upon an equal footing with European natives. The Creole women are characterized by the symmetry of their persons, the brilliancy of their eyes, and the sallowness of their complexions.

CREPI'DULA. [CALYPTRÆIDÆ.]

CREPUSCULA'RIA (Latreille), a section of Lepidopterous insects, corresponding with the genus Sphinx of Linnæus. These insects occupy an intermediate station between the *Lepidoptera Diurna*, or butterflies, and the *Lepidoptera Nocturna*, commonly called moths.

Distinguishing characters:—Antennæ growing gradually thicker towards the apex, at which part they are furnished with an elongated club, either fusiform or prismatic. Inferior wings furnished with a rigid bristle-like process at their base, which passes into a hook on the under surface of the superior wings, and serves to retain them. The larvæ are furnished with sixteen legs, and many of them have a long horny process on the last segment of the body. The chrysalides are smooth, or sometimes furnished with small spines (but destitute of the points and angles usually observed in those of butterflies); they are either inclosed in a cocoon or buried in the earth: the larvæ sometimes feed upon wood, in which case they assume the pupa state within the tree or branch.

The families contained in this section are the Sphingidæ, Sesiidæ, Ægeriidæ, and the Zygænidæ.

CREPU'SCULUM. [TWILIGHT.]

CRESS, the name given to various plants with acrid or pungent leaves. Common cress is *Lepidium sativum;* water-cress, *Nasturtium officinale;* Belleisle or Normandy cress, *Barbarea præcox;* Indian cress, *Tropæolum majus.*

CRESSY. [CRECY.]

CREST, from the Latin *crista*, the ornament of the helmet: a term in heraldry sometimes used for the helmet itself. Hence, *to crest*, to adorn as with a plume or crest, in Milton, *Par. Lost*, ix. 500,

> 'his head
> *crested* aloft.'

In speaking of the cimier or crest, says Dallaway (*Inquiries into the Origin and Progress of Heraldry in England*, 4to., Glouc. 1793, p. 386), it will be necessary to describe the armour worn for the defence of the head, and the progressive embellishments which were added to its rude form, with the æra of their invention. Montfaucon, that most critical antiquary, has preserved many delineations of the antient Norman casque, which, when the whole body was invested in mail, was composed of iron framework, covered with leather, and quite flat at the top, to which shape succeeded the conical head. By the number of bars of which the beauvoir or visor consisted, when presented in front view, the rank of the wearer was ascertained; that of the esquire was always in profile and closed, to denote his vigilance and activity in battle. To Edmund Crouchback, earl of Lancaster, the origin of several heraldic novelties in this kingdom is readily referred, and his seal will be found to exhibit the crest, accompanied by the lambrequin and wreath, as the first instance, prior to the year 1286. The crest is said to have been carved in light wood, or made of leather, in the shape of some animal, real or fictitious, and fastened by a fillet of silk round the helmet, over which was a large piece of fringed samit or taffeta, pointed, with a tassel at the end. Before figures were introduced, plumes only were used, as well upon the head of the horse as on that of the warrior, which we gather from the seal of Baron de Spencer in 1296. The principal application of crests was in jousts or hastiludes, when the shield was not borne, but where they afforded an equal distinction; or by the chief commanders of horsemen in the field of battle. Originally of the highest importance, conceded by royal grant, and confined to very few persons; in process of time the assumption of them has become universal. They are not held to be absolutely hereditable, but may be assumed; and as females could not avail themselves of their primary use, accordingly no woman is allowed to bear a crest. As an appendage to sepulchral monuments, crests are placed beneath the head of the armed effigy, attached to the helmet by the wreath and lambrequin; and at the feet a lion or dog is invariably added. Upon many of the large altar tombs, so frequent in the sixteenth and seventeenth centuries, those both of the man and of his wife's family are carved at the feet of the recumbent figures.

Instances of crests formed of feathers may be seen in that of Sir Henry Percy, in Edward I.'s time, engraved at the bottom of plate xxiv. of Meyrick's 'Critical Inquiry into

Antient Armour,' and in that of Sir John Harsick, *t.* Richard II., 1376, in plate xxxvi. of the same work: and many such occur in the illuminations to the contemporary manuscripts of Froissart's Chronicle. The custom of conferring crests as distinguishing marks seems to have originated with Edward III., who in 1333 (*Rot. Pat.* 9 Edward III.) granted one to William Montacute, earl of Salisbury, his 'tymbre,' as it is called, of the Eagle. By a further grant in the 13th of the same king (*Rot. Vasc.* 13 Edw. III. m. 4.), the grant of this crest was made hereditary, and the manor of Wodeton given in addition to support its dignity.

CREST. [DROME, Department.]

CRESTED DOGSTAIL GRASS. [CYNOSURUS.]

CRETACEOUS GROUP, in Geology, consists of the upper strata of the secondary* series immediately below the tertiary* series and superincumbent on the Wealden, or where that is wanting, on the oolitic system. This group is common to Europe, and also to at least a part of Asia. It consists of chalk resting upon either an arenaceous or argillaceous deposit. The chalk bears a remarkably uniform mineralogical character over a surface extending from the British islands through northern France, northern Germany, Denmark, and Sweden, into both European and Asiatic Russia. (De La Beche, *Res. in Theor. Geol.*) The cretaceous system is subdivided into the following strata:—

Chalk .	Upper	In which numerous species of marine fossils are found, amounting to about 260 genera and 768 species.
	Lower	
	Marly	
Green-sand	Upper Green Sand	
	Gault	
	Lower Green Sand	

The area over which this system prevails in England, and the various strata which it contains, have been well defined by geologists. The following article is chiefly abstracted from a valuable paper on the subject inserted by Dr. Fitton in the *Geological Transactions*, 2nd series, vol. iv. p. 2. pp. 103—388.

The Cretaceous Group occupies nearly the whole of the south-eastern part of England: a line drawn from Crewkerne on the S.W. to Hunstanton on the N.E. forms its western boundary, and it extends from this line to the east coast, with the exception of a small part on the S.E. The same formation appears to prevail in the north of France, extending to the cretaceous district of Aix-la-Chapelle. The chalk, or upper portion of the system, is, in some parts, covered with the strata of the tertiary series; in other parts it is denuded. The green-sand crops out round its edge, which is broken and interrupted in many places where the lower strata appear.

On the N.E. the chalk appears in a narrower belt along the cliff from near Cromer to Hunstanton. From Cromer along the coast to the mouth of the Thames, and along the north bank of that river, it is concealed by the upper strata, which extend a considerable distance inland.

Beginning with Norfolk and proceeding southwards, the boundary line between the chalk and the superior strata, is about four miles east of Snettisham, two miles west of Diss, eight miles east of Mildenhall, between four and five west of Bury St. Edmunds, continuing to the north-east of Hertfordshire by Hertford and near St. Albans to three miles south-east of Wendover.

In the northern part of this district the chalk has in a few places been partially denuded. On the north-east there is a small piece of chalk along the banks of the Bure. The town of Norwich also stands upon chalk, which, in its vicinity, extends along the banks of the Yare and Wensum. There is a piece of chalk likewise at each side of small parts of the Stour and of the Orwell. The strata superincumbent on the chalk series extend a little beyond Uxbridge on the west, and then run in a narrow tongue to the north-west, three miles south of Wendover, which intervening space at that point is the whole width of the denuded chalk, Wendover being there its western limit. The chalk becomes wider towards the south-east, taking in Maidenhead; it is again partially covered a little to the west of that place, and continues in a very uneven line to Reading, Newbury, and a little to the east of Marlborough. The tertiary strata then run from west to east by Kingsclere, Basingstoke, Guildford, to three miles north of Dorking, round by the Darent, and appears near Woolwich and Greenwich. Another detached portion appears in the north-west of Kent, taking in the Isle of Sheppey, and continues from the estuary of the Medway along the coast to the Isle of Thanet. The chalk is covered on the west and north of Canterbury and of Sandwich; the beds which cover it terminate on the coast at Deal. On the south coast, from Worthing westward, the chalk is again concealed by the superincumbent series, extending nearly in a straight line through Chichester as far as a little to the east of Salisbury; it then continues in a south-west direction nearly as far as Dorchester. The chalk passes entirely across the Isle of Wight nearly from east to west, in a narrow ridge consisting of vertical strata, from Culver Cliff to Compton Bay; there is also a small piece on the south of the island. The limits of the chalk on the other side, where it is bounded by the outcropping of the lower strata of the system, remain to be noticed. The cliffs of the whole of the Isle of Thanet are composed of chalk. The chalk cliffs again commence near Deal, and are continued past Dover to East Weare Bay, a distance of about thirteen miles. As the chalk rises from Dover towards Folkstone the upper beds disappear, and the cliffs consist entirely of the lower members of that stratum. The rise of the marly chalk occurs about a mile and a half to the east of the escarpment of Folkstone hill, which is 566 feet high. Just at the rise of this bed there is a very copious and perennial spring called Lydden Spout. About two thousand paces west of this spring the cliff recedes from the sea, and the intermediate shore thence to Copt Point is occupied by a mass of ruins which has fallen from above. The sudden transition from the chalk cliffs is very remarkable. Turning inland the chalk range is bounded on the south by the outcrop of the green-sand strata, which extend four miles north of Ashford, three miles north of Maidstone, and is cut by the Medway, whence it forms a line curving outward to the south as far as the Darent, where it is five miles north of Sevenoaks. Merstham is on the boundary, which then continues in nearly a west direction, immediately north of Reigate, to Box Hill, near Dorking, and thence to Guildford, leaving a very narrow ridge of chalk. From Guildford to a point about two miles from Farnham there is a remarkable ridge called the 'Hog's-back,' produced by an upthrow of the chalk and the breaking off of the southern portion of the curve. The coast between Copt Point and Beachy Head, near these respective points, is occupied on each side by the green-sand, and the intermediate space by the Wealden clay and Hastings sand: the two latter do not belong to this series, being lower denuded strata. The Sussex chalk range, or South Downs, commences at Eastbourne, near Beachy Head, and continues thence along the coast beyond Shoreham and onwards in a west-by-north direction. The green-sand bounds it on the north, and leaves a range of chalk varying from eight to three miles in breadth. About three miles south-west of Petersfield the green-sand again sinks below the chalk, which is connected with the north range by the Alton chalk-hills, running from near Farnham to near Butser Hill (917 feet).

It now remains to define the boundary of the chalk from Dorsetshire on the south-west to Norfolk on the north-east. Part of it is thus described by Dr. Fitton:— 'The great range of the chalk escarpment in the interior of England, which stretches like the shore of a sea or lake from Crewkerne in Dorsetshire to the north-east of Dunstable in Bedfordshire, is perfectly analogous in structure and appearance to the Downs of Surrey and Sussex. It is interrupted by three or four indentations or gulfs; one of great width, opening towards the west between Crewkerne and the heights about Stourhead, in South Wiltshire; another expanding to the north-west, and terminating in the defile where the Thames cuts through the chalk in its way to the south-east from Buckinghamshire and Oxfordshire. The vales of Pewsey and of Warminster are intermediate bays of the same general structure, but of smaller dimensions; and all these valleys are apparently the result of denudation, aided by previous disturbance of the strata, which has carried away the chalk and laid bare to various depths the strata beneath it.' (*Geol. Tran.*, 2nd series, vol. iv. part 2nd., p. 243.) From the heights near Dunstable, the upper chalk range passes through the north-west of Hertfordshire, by Hitchin and Baldock, to Barkway and Royston Downs, and thence by Balsham and Newmarket into Suffolk by Mildenhall, two miles west of Brandon, four west of Downham, by Narborough, and on to Snettisham. The chalk hills decline rapidly in height in the north-east of Bedfordshire. Kensworth-hill is 904 feet above the level of the sea; the hills east of that town are 850 feet high. Lilleyhoe is 664; Barkway Windmill, 513; the station near Royston, 484; Balsham, on the east of Cambridge, 380; Newmarket station, 267; Brandon, in Suffolk, 190 feet. The chalk hills stretching from Cambridgeshire to the north-west coast of Norfolk rise nowhere probably above 600 feet in height, bounding 'the fen country like the low shore of a sea.'

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* These terms are now considered objectionable by geologists, as not truly designating the different series; but since they are still commonly thus distinguished, it has been thought advisable to adopt the same classification here.

The chalk inland range is highest towards the central part between Wiltshire and Hertfordshire. In departing from that central tract, the rise is comparatively small both towards Devonshire on the south, as well as in the counties northwards. The chalk nearly disappears in Devonshire, a few insulated portions only appearing there; principally upon the coast between Sidmouth and Lyme and along a line from Beaminster through Chard and White Stanton. The transition from the chalk to the green-sand is here distinctly seen, especially on the south-west of Axmouth, where sections of the subjacent beds are exposed in the cliffs. In many parts of the chalk range, the upper and lower strata are well defined even by the outward features; a marked difference appearing in the vegetation and general aspect. The upper chalk has usually layers of flint nodules occurring at regular intervals, and is softer than the lower chalk. At Sandown Bay in the Isle of Wight the latter stratum is defined by a layer of distant and insulated flints which separates it from the flinty chalk above; it is sometimes of a greyish colour, as is also the bed of marly chalk immediately beneath it. This marly chalk is of a tenacious nature, and sustains the water which descends through the chalk; in consequence a line of ponds has been produced along the bottom of the escarpment of the South Downs. The *Malm-land*, remarkable for its fertility, is the soil over the lowest beds of marly chalk. The *Malm-rock*, immediately below the marly chalk, consists of stony beds belonging to the upper green-sand formation. Salisbury Plain, which is more than twenty-five miles in extent from west to east, and twelve miles from north to south, is occupied by the upper chalk. Though it has many inequalities of surface, it would be almost destitute of water, but for the Avon and its branches, which traverse it. But in the tracts occupied by the lower chalk, and still more in the chalk marl, there are few valleys without streams; hence, as well as owing to the difference of soil, the vegetation differs also, and the luxuriance of the lower regions, affords a strong contrast to the barrenness of the higher downs. Dr. Fitton observes, 'were it not that the colour is so nearly alike, these two groups would no doubt have been distinguished in geological maps by different hues; and they ought to be so, wherever the scale is sufficient to express the distinctive features above stated.' The village of Dunstable stands on the lower chalk, which may be distinctly traced from Totternhoe through Houghton Regis, Upper Sundon, and Streatley.

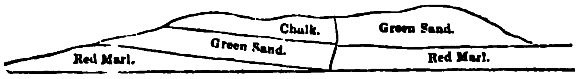
Accurate measures of the entire thickness of the chalk, have rarely been made in England; the following are however approximate numbers taken from the best authorities. Mr. De La Beche's estimate of the average thickness of this stratum is 700 feet. Dr. Conybeare considers it to range from 600 to 1000 feet. The height of the cliff at Beachy Head, which at the summit includes part of the flinty chalk, and goes down very nearly to the upper green-sand, is only 535 feet; 350 feet is the thickness of the flinty chalk at Dover. If then 250 feet are added for the remainder of that division at Beachy Head, the aggregate thickness of the chalk on the Sussex coast may be estimated at about 800 feet. At Wendover Hill, the total thickness of chalk is considered something more than 500 feet. At Diss, in Norfolk, it was found by boring to be 510 feet. The great variation in thickness is ascribed in part to the unequal removal and abrasion of the upper strata, and in part to the original inequality in the thickness of the chalk itself.

The organic remains in the chalk are usually very abundant, and are mostly marine. They consist of marine plants, lamelliferous and celluliferous corals and sponges, Asteriadæ, Crinoidea, and Echinida, mesomyonous and brachiopodous Conchifera, phytiphagous and cephalopodous Mollusca, Crustacea, Fishes, Mososaurus, Chelonia. Mr. De La Beche observes, 'organic remains are in general beautifully preserved in the chalk; substances of no greater solidity than common sponges retain their forms, delicate shells remain unbroken, fish even are frequently not flattened, and altogether we have appearances which justify us in concluding, that since these organic exuviæ were entombed, they have been protected from the effects of pressure by the consolidation of the rock around them, and that they have been very tranquilly enveloped in exceedingly fine matter, such as we should consider would result from a chemical precipitate.' p. 349. *Researches in Theoretical Geology.*

Green-Sand. The general position of this stratum has been sufficiently indicated in describing the boundary of the chalk, the former outcropping round the latter in an uneven line, in some places much wider than in others.

The Upper Green-Sand commences immediately on the north of Copt Point beyond Folkstone, where the succession of the various beds of the system is best seen. Here the upper green-sand is of comparatively small thickness, and occupies a very narrow belt round the chalk, running in a west-north-west and then in a westerly direction, as already defined in describing the chalk boundary. It assumes a new character near Godstone, and is there more distinctly marked. The firestone obtained in that part of the country is in the upper green-sand, occupying four beds separated by seams of stratification; the thickness of the two first beds is respectively one foot nine inches, and one foot four inches; the two others are only ten inches each; this stone is extensively quarried between Godstone and Reigate. Continuing still in a narrow belt to Guildford, the upper green-sand forms a slight projection along the foot of the Hog's Back; from Farnham by Selborne and Petersfield to the south of Petworth, this stratum runs out beyond the foot of the chalk escarpment like a step or terrace. Near Petersfield it is remarkable for its width, which is there two miles, a much greater extent than at any other part. A little east of Petersfield, for a short space, this stratum entirely disappears; it then continues in a narrow belt along the north escarpment of the South Downs. This formation is but partially disclosed along the base of the central ridge of chalk in the Isle of Wight, but it is distinctly seen along the escarpments of the Under-Cliff; its step-like projection beyond the chalk, as seen in Western Sussex, is likewise observable here in several places.

In the Isle of Purbeck the green-sand runs in a narrow band on the south escarpment of the chalk, but there the separation of the upper and lower green-sands has, in a great measure, disappeared, and the latter is greatly reduced in thickness or wholly united with the upper sand. The Black Down Hills, in Devonshire, are composed of green-sand; the two beds thus united wanting the intermediate gault. These hills are distinguished by the uniform level of their summits, and, when cursorily viewed, appear to be composed of horizontal or nearly horizontal beds of green-sand, with here and there an occasional patch of chalk. It is found however that the rocks composing these hills have been fractured subsequently to their deposition, and that the valleys mostly are lines of faults, having a general northerly direction. At some parts there are faults which do not form valleys. In a section across a southern part of the hills the chalk and green-sand seem to form a continuance; green-sand being on one side of a vertical section, and chalk on the other. In the yellowish sand, near the surface, at the Barnscombe side of the Beacon Hill, brown iron ore is found in polished fragments of very high lustre. Whet-stones are obtained from the Black Down Hills, the manufacture of which occupies a great number of the neighbouring inhabitants. The quarries are driven in direct lines into the hill, almost horizontally, about eighty feet below the top of the hill. The stones from which the whet-stones are cut are irregular concrete masses, imbedded in a looser sand, and more properly belong to the lower green-sand stratum; but the different strata of the green-sand of these hills are not distinguished by Dr Fitton, as the gault between the upper and lower green-sand is entirely wanting. The upper green-sand is not distinctly marked in the great south-western escarpment of the chalk till beyond the Stour, from the north bank of which it extends northwards for about ten miles to Shaftesbury, and continues thence round the vale of Wardour. Or



the south side of the vale of Wardour the upper beds of this stratum are concealed at the foot of the chalk hills, but the lower beds shoot out into plateaus, which form the tops of the hills all the way from Shaftesbury along the south side of the vale of Wardour. On the north side of the vale the whole series of the upper green-sand rises abruptly, and forms a narrow ridge of unequal height. At the north of the valley this stratum appears to consist of two portions; that which immediately succeeds the chalk is the same as the firestone of Surrey; the other is equivalent to the malm-rock of Sussex, and abounds in chert. In a well sunk at Ridge the upper green-sand is distinguished into four different strata, their aggregate thickness being 100 feet. The upper green-sand is not nearly so conspicuous inland as near the coast; from the vale of Wardour it does not occur again till the vale of Pewsey. The town of Devizes stands upon a platform of the upper green-sand, which is there about 430 feet above the sea. It occurs again at Swindon, and then at Tetsworth, whence it continues in a narrow belt and in a north-east direction beyond Cambridge.

The upper green-sand consists in some places of a soft marly sand, traversed in every direction by stem-like cylinders, having within them cores of darker green matter; it also contains some irregular masses of a bright brown or orange hue, but the greater part is composed of grey calcareous marl, resembling the lowest chalk, but so thickly interspersed with green particles as to entirely assume their colour. The green particles, according to analysis, are found to consist of—

Silica	48·5
Black Oxide of Iron	22·0
Alumina	17·
Magnesia	3·8
Water	7·
Potash . . . . . . traces	
	98·3

The thickness of this series near Folkstone is from 25 to 30 feet: at Godstone it increases considerably, and the depth of the wells sunk through it in the malm-rock strata of Hampshire varies from 60 to 100 feet. In Western Sussex the thickness is between 70 and 80 feet. It is about 70 feet in the Isle of Wight. The thickness of the green-sand at Black Down is about 100 feet, probably from 60 to 80 in the vale of Wardour, and from 30 to 50 near Swindon. At Cambridge it is not more than 18 inches; thence through West Norfolk the stratum is no where distinctly seen. At Hunstanton the beds which are supposed to represent it are not more than two feet thick.

Gault.—The stratum which is usually found between the upper and lower green-sand is obscured at East Weare Bay by the ruins of the superior beds, but is visible in detached points. Farther on, towards Folkstone, it becomes more marked, and forms the greater part of the cliff at Copt Point, as well as the grassy cliff between the base of the Martello tower situated in the vicinity and the sea. Thence it forms a narrow band between the upper and lower green-sand. Near Godstone it occupies a tract distinguished as 'the Black Land,' and forms a slight depression below the stratum which affords the firestone. Between Farnham and Alton this narrow belt of gault swells out to three or four times its former width, and then again narrowing continues to form a narrow band between the two strata of green-sand as far as Beachy-Head. In the Isle of Wight this stratum likewise forms a narrow band between the upper and lower sand. The gault again appears in the vale of Wardour: on the south it forms a rapid slope; on the north a depression immediately below the sand: it is here identified with that in the eastern counties by the characteristic fossils. At Ridge, near Fonthill Park, the clay of this stratum has been long used for tile-making, and it is there 75 feet in thickness. From the vale of Wardour and thence north-eastward to the sea at Hunstanton the gault everywhere appears, though it is much reduced in quantity in Norfolk. This stratum occupies a large part even of the higher grounds between Whitchurch and Wing. Immediately to the west of Hitchin and Baldock it is still wider; the towns of Shefford and Biggleswade stand on it. From Cambridge, for a few miles towards the north, it likewise occupies as great a width. In consequence of the numerous borings for water made in Cambridgeshire about this part, its relations and thickness have been well ascertained, especially from Basingbourne through Meldrith, and thence towards Cambridge. This stratum is very distinct at Mildenhall: the blue gault has been traced as far as West Newton, about three miles south of Ingoldsthorpe. The valley between the chalk and lower green-sand is there interrupted by an advance of the chalk; and beyond that point the blue gault is no longer observable: its place is thence occupied by the red marly stratum of Hunstanton Cliff, which is a calcareous argillaceous matter, four feet thick, and it is questioned by geologists whether the term gault should be applied to it. The gault, as far as regards its composition, may be divided into two portions; the upper part, immediately succeeding the upper green-sand, contains green particles, and thence for some feet downwards it is harsh and sandy. The lower portion consists of a smooth, uniform, very plastic clay, of a light-blueish colour, which is used for tiles and common pottery. Throughout the gault, but chiefly in the lower part, concretions of iron pyrites are found, and other nodules and irregular masses. The thickness of this stratum at Copt Point is about 130 feet. At Merstham it is 150 feet thick, which is likewise the average thickness in Cambridgeshire. In the Isle of Wight it is about 70 feet; at Ridge about 75; near Thame 90 feet: at Mildenhall the blue clay is only 9 feet. Mr. Rose considers it not more than 15 feet in West Norfolk.

The Lower Green-Sand.—This stratum appears of a uniform surface, shooting out beyond the chalk in the south-east counties, and occupies a much larger area than either of the upper strata of the green-sand series. The resemblance in the aspect of the surface of the country, here occupied by the lower green-sand, to that of the Black Down Hills, in Devonshire, is extremely striking; and perhaps indicates that the description of the latter more properly belongs to this section than to that which treats of the upper green-sand stratum. The lower green-sand has three distinct subdivisions, clearly defined in most parts where it occurs. This series of strata rises gradually from Copt Point, and occupies the whole cliff west of the village; thence it is continued without interruption through Sandgate, and in the heights above Hythe. Its outcrop turns from the coast to the interior at Adlington Corner: here the subdivisions are all distinctly marked, and their respective limits defined. The lower beds, which contain much calcareous matter, are extensively worked in quarries, both for building and lime-burning, at Pluckley, on the north-west, and at Great Chart, on the south-west of Ashford, and generally along the outcrop west of Adlington Corner, where it forms a prominent ridge adjoining the valley of the Weald: here are the principal beds of stone known under the name of 'Kentish Rag.'

Extensive quarries are worked at Boughton, to the south of Maidstone. The stone for the construction of Westminster Abbey is said to have been procured here. The stone is a variety of the Kentish rag. From Adlington Corner the lower green-sand continues towards the west in a broad band varying in width; on the coast the distance from the chalk at Folkstone-hill to the outcrop of this series is about ten miles, but from Lenham to the outcrop it is not more than two. Maidstone, Sevenoaks, Godstone, Reigate, Dorking, and Godalming, stand on the lower green-sand series. Near Godstone the surface is comparatively lower, and ponds are frequent where the middle stratum occurs; the stony beds of the lowest group then rise to form the escarpment of Tilburstow Hill, which is nearly on a level with the chalk downs. At the top of the hill, the beds, which to the north of Tilburstow Hill rise uniformly at an angle of not more than 10°, are suddenly thrown up to about 45°, giving decisive evidence of an elevation from the chalk, or of a sinking towards it. Fuller's earth has been dug in this part of Surrey for a very long period; at present the neighbourhood of Nutfield is the only place in which it is got. The beds occur near the top of the lowest stratum of green-sand; in one pit near Nutfield the principal bed of fuller's earth is 16 feet thick. On the south of the Hog's-Back the lower green-sand rises, like the chalk, at a very high angle, and then, being bent suddenly in an opposite direction, is continued several miles to the south. Hindhead is the most prominent point in this part of the country, where the whole of the tract occupied by the lower green-sand is wild and barren, producing only fern, heath, and furze. Dr. Fitton remarks—'In crossing this desolate region by the main road from London to Portsmouth, it is difficult to believe that we are only forty miles distant from the capital, and midway to one of the chief naval establishments of the empire; but the nature of the soil effectually prevents improvement, and it is not improbable that this tract may remain for centuries unchanged, and still exemplify the power of geological causes in modifying the civil condition of countries, as well as their external features.' (*Geol. Tran.*, series 2nd., vol. iv. p. 147.)

As this formation turns towards the east and continues along Sussex to the coast, it is not nearly so wide as on the north of the Weald. At Beachy Head it is three miles wide, but it is only one mile wide a little to the west of the spot where the Adur runs through it. The lower green-sand occupies a great part of the surface on the south of the Isle of Wight, and is everywhere conformable to the chalk; a ridge of highly inclined strata of green-sand crossing the island from the shore on the south of Bembridge down to the foot of Afton Down. The sands likewise form the lower ground of the interior from Mottestone through Newchurch to the coast.

A narrow belt of green-sand runs along the west and north-west of Dorsetshire. In the vale of Wardour the lower green-sand is no where prominent; but it occupies the whole of the entrance of the Vale of Pewsey, and continues, with its subdivisions well defined, through the northern counties in a north-east direction as far as the coast of Norfolk. The greatest width of the formation in this part occurs between Leighton and Ampthill in Bedfordshire, where it rises in Bow-Brickhill to the height of 683 feet above the sea. Near Woburn there is a fuller's-earth pit, the beds of which occur, like those in Surrey, near the top of the lowest division; that of the best quality is in a bed from seven to nine feet thick. The pits in this part of the country have continued to supply fuller's earth for more than a hundred years.

The three groups into which this stratum is divided, are, in most places in the south-east counties where sections have been made, well defined; and in general, in different situations where this formation occurs, the respective characteristics are found to be alike.

The first of these subdivisions consists principally of sand, white, yellowish, or ferruginous, with concretions of limestone and chert. It commonly forms a flat, but sometimes an irregularly hilly surface rising from the valley of the gault; it bears a dry barren soil. The second group contains an abundance of green matter and comparatively little stone; it is retentive of moisture, and occupies a flat and marshy tract. The third and lowest group contains more calcareous matter than the upper divisions. Where the sand of the first division emerges from beneath the gault it is often loose and of a white or buff colour; but sometimes there occurs a course from half a foot to one foot in thickness of concretions of pyrites. The middle group is characterized by a great diversity of colour and consistency which it assumes under different circumstances. When dry, the hue is frequently of a rusty yellow; but in other states it is of a dark greenish colour, and passes rapidly from the consistency of loose dry sand to a tough cohesive mass. At the very lowest part it is sometimes very marly. The fuller's earth belongs to this portion of the series, or to the upper part of the lowest division: the lower part of the latter is usually a group of stone beds, separated by yellowish calcareous sand and clay, commonly called 'Hassock.' The whole thickness of the lower green-sand on the shore between Copt Point and Hythe is about 250 feet, thus distributed—

First sub-division about 70 feet; second, from 70 to 100; and the third, from 60 to 80 feet. In western Sussex, Mr. Murchison states that nearly 400 feet of sand were bored through at Petworth; and Mr. Martin considers that the two lower members may be together about 150 feet thick. In the Isle of Wight the thickness seems to be as great as, if not greater than, that near Folkstone. At Brill, in Buckinghamshire, this formation is found to be about 26 feet; in West Norfolk, Mr. Rose estimates it at about 80 feet.

The organic remains are mostly marine throughout the whole of the green-sand series. There are marine plants, celluliferous corals, sponges, Asteridæ, Echinida, Conchifera, phytiphagous, a few zoophagous, and many cephalopodous Mollusca, Crustacea, &c.; often silicified. Numerous fossils have been found in the Blackdown Hills, usually in a state of fine preservation, principally from the loose sandy character of the matrix in which they are imbedded. The composition of the fossils is also another cause of their good preservation; with but few exceptions, the shells are converted into chalcedony, and the whole of their calcareous matter has disappeared. A very extensive collection of fossils from these hills, formed by the late Mr Miller, is now in the museum of the Bristol Institution.

The reader may consult Greenough's and Walker's Geological Maps of England for the general distribution of the beds here described.

For the description of the chalk in Yorkshire and Lancashire, see their respective counties.

CRETE. [CANDIA.]

CRETINS, the name given in the Valais and other Alpine valleys to certain individuals who are more or less idiots, and most of whom have large swellings on their necks, called goîtres. The goître or wen is not however always a necessary sign of crétinism. Many have goîtres without being crétins or idiots; and some crétins, it is said, have no goîtres, but the latter fact seems doubtful, or at least rare. The goîtres are of all sizes, from that of a walnut to the size of a quartern loaf. There are also various gradations of crétins; those in the lowest state of idiotcy cannot articulate distinct sounds, but make a sort of cry, or burst out into an idiotic laugh; they are as helpless as infants, and their intelligence seems below that of many brutes. Others are able to go about, and attend to some easy labour, and make themselves understood. They are numerous about the villages and hamlets of the Lower Valais and of the Val d'Aosta; they are not so common in the German part of Switzerland, where, in many of the valleys, they are unknown: it is said that they are not found among the natives of the higher valleys or mountains; even in the Upper Valais, east of Sion, they are rare. There has been much discussion about the causes of this infirmity: some have attributed it to the nature of the water; others, and Saussure in particular, to the stagnation of the atmosphere; for it appears to be most frequent in the low marshy spots at the bottom of valleys surrounded by high mountains, where the fresh air does not circulate freely, and where the reflected rays of the sun are very powerful in summer. The germ of the disease seems to be hereditary, though all the children of the same family are not affected by it; but there is no doubt that localities, poor diet, filth, laziness, and ignorance, materially assist its development. Since the beginning of the present century it has been observed that the number of crétins in the Valais has decreased, which is attributed to better social and domestic habits of life, to the drying up of marshes, the use of purer water for drink, and to the custom of sending children, during summer, to the upper valleys and châlets, among the Alps. The general use of coffee is also said to have contributed to it. (Walsh, *Voyage en Suisse*, vol. ii.; *Canton du Valais*). The Cagots, in some valleys of the Pyrenees, appear to be a sort of crétins.

CREUSE, an inland department of France, deriving its name from one of the rivers by which it is watered. The department is of a compact form, approaching to oval, having its greatest length N.W. and S.E. 68 miles, and its greatest breadth at right angles to the length 50 miles. It is bounded on the N. by the departments of Indre and Cher, on the N.E. by that of Allier, on the E. by that of Puy de Dôme, on the S. by that of Corrèze, and on the W. by that of Haute Vienne. Its area is about 2057 square miles: it contains 284 communes, or parishes; and the population in 1832 was 265,384, or about 129 to a square mile, being considerably below the average population of France relative to the surface. Guéret, the capital of the department, is in 46° 10′ N. lat., and 1° 51′ E. long.: 186 miles in a straight line S. by W. of Paris, or 255 by the road through Briare, Nevers, Moulines, and Montluçon.

The department is hilly: the hills that pervade it are branches from the central mass of the Auvergnat mountains. The two principal chains of hills run nearly N.N.W. and S.S.E., and enclose between them the valley of the Creuse. This river rises in the S.E. part of the department, near the boundary which separates it from the department of Corrèze, and flows northward past the town of Filletin to Aubusson, receiving the waters of the Roselle on the right, a little above Aubusson. From Aubusson it flows N.N.W. through the valley above described, which runs nearly the whole length of the department. Just before it enters the adjoining department of Indre, the Creuse receives on the right the Petite Creuse, or Little Creuse, which rising just beyond the north-eastern boundary of the department, in the neighbourhood of Boussac, and swelled by the waters of the Veron, flows westward into the Creuse, and on the left the Sedelle (which is augmented by the waters of the Gazine and Brisentine): but neither of these streams is navigable, nor does the Creuse itself become so during the whole of its long course of from 130 to 140 miles, nearly 60 of which are within this department. It falls into the Vienne, a feeder of the Loire. The Cher, one of the principal feeders of the Loire, rises in the eastern part of the department, also the Tardes, a tributary of the Cher. On the western side of the department we have the Gartempe, the principal feeder of the Creuse (but which does not join that river until long after it has quitted the department), and the Ardour, an affluent of the Gartempe. On the south-western side there are the Maude and the Thorion, tributaries of the Vienne; and the Villeneuve, the Leyrenne, and the Visge, feeders of the Thorion. Most of the rivers which water the department on the W. and S.W. rise on the W.S.W. slope of the chain of hills which bounds the valley of the Creuse. There are small lakes at the head of the Gazine and of the Ardour.

Beside being destitute of all means of water-carriage, the department possesses very little facility for communication by land. No road of the first class touches the department at all, nor is there any of the second class, except on the west side, where about four miles of the road from Paris to Limoges are within the boundary. Of roads of the third class there are several which unite at Guéret, one from La Châtre (department of Indre); one from Dorat, and one from Limoges, (both in the department of Haute Vienne); the latter unites at Bourganeuf with one from Uzerche (department of Corrèze); one from Clermont Ferraud (department of Puy de Dôme); and one from Montluçon (department of Allier): a road of the same class leads from Aubusson to Bourganeuf, and another from Aubusson to Auzance.

The soil of the department of Creuse is very inferior, and combines with the want of the means of communication to reduce the value of the land very far below the average of France. The produce in corn (wheat, rye, barley, and oats) is small; and there is no wine made: the country is not well wooded, but there is good pasturage, in which a quantity of horned cattle and sheep (especially the latter) are fed. The mineral productions of the department have not been sufficiently attended to: there are four places in which antimony is found, but in only two have any mining operations been carried on: the coal-pits in the valley of the Creuse have been very inadequately worked; the iron ore has been neglected, and there is sandstone which would make grindstones, and granite and porphyry for building, or for ornamental works. The inhabitants are industrious, but the low rate of wages and the want of employment at home induces many to seek work in other parts. The love of their native soil however leads most of these emigrants to return home with the fruit of their labours, and purchase a patch of land, in the cultivation of which and in the bosom of their families they spend their days. These emigrants amount to about 23,000 or 24,000 yearly, about 1 in 11 of the whole population: they are mostly mechanics. Of the emigrants in the year 1825, 13,427 were bricklayers and masons, 1982 stone-cutters, 1942 carpenters, 1847 sawyers, 944 tilers and slaters, 803 flax and hemp dressers, 802 tile-makers, 545 paviers, 90 farriers, 63 plasterers, and 45 miners. The chief manufactures carried on in the department are of carpets, which are in high repute; paper, which is also in high estimation, and cotton and woollen yarn. Aubusson is the chief seat of the carpet manufacture.

The department is divided into four arrondissements, that of Guéret on the N.W., population in 1832, 89,513; that of Boussac on the N.E., population 36,738; that of Bourganeuf on the S.W., population 37,965; and that of Aubusson on the S.E., population 101,168. The chief towns are Guéret, the capital, on the hills which skirt the valley of the Creuse on the W.S.W. side, population 3100 for the town, or 3921 for the whole commune; and Aubusson, on the Creuse, population 4354 for the town, or 4847 for the whole commune. For these towns, as well as for Bourganeuf and Boussac, the other capitals of arrondissements, we refer to their respective articles. Of the other towns we subjoin a brief notice.

Felletin is on the Creuse, near its source, and not far from Aubusson. It had, in 1832, 2816 inhabitants for the town, or 3228 for the whole commune. About 300 people are employed in the carpet manufacture, in which this town almost rivals Aubusson. Coarse woollen cloths and paper are also made.

La Souterraine is near the source of the Sedelle, on the road from Dorat (Haute Vienne) to Guéret. The population in 1832 was 1647 for the town, or 2921 for the whole commune. The inhabitants are engaged in the manufacture of coarse hempen cloth.

Ahun, or Le Moutier (*i.e.* Monastère) d'Ahun, is on the banks of the Creuse, between Aubusson and Guéret: it has about 2000 inhabitants, who manufacture woollen cloth. Ahun and Le Moutier d'Ahun were originally distinct, the former being on the summit of a hill near the river, the latter at the foot of the hill and on the bank of the river. Ahun was known to the Romans by the name of Acitodunum, which name appears in the 'Theodosian Table:' in the middle ages (A. D. 997) the name appears, by the title deeds of the foundation of the abbey of Le Moutier d'Ahun, to have been shortened into Agêdunum, from whence, by corruption, the modern name Ahun. Le Moutier d'Ahun derives its name from an abbey of the Benedictine order, and of the congregation of Cluny, the importance of which is indicated by the buildings and gardens which yet remain: the Conventual Church is still the resort of numerous pilgrims on the festival of St. Roch, August 16.

The other towns are, in the arrondissement of Griéret, St. Vaulry, on the road from Dorat to Guérat, with the bourgs of Bonat on the Petite Creuse, Dun-le-Palleteau, near the Bresentine, and Salagnac and La Chapelle, on the Gartempe: in the arrondissement of Bourganeuf, Benévent, near the Ardour: in the arrondissement of Boussac, Gouzon, on the road from Guéret to Montluçon, Chambon on the Tardes, and Jarnaye, with the bourg of Châtelus: in the arrondissement of Aubusson, Auzance near the Cher, Evaux near the Chacrot, and Chenerailles, on the Voulse, a feeder of the Pontchauseau, with the bourgs of Mainsac, Crocq (on the Tardes), Bellegarde and La Courtine. None of these have a population of 1500 for the town or 3000 for the whole commune.

The department of Creuse is in the diocese of Limoges, which includes also the department of Haute Vienne: the bishop is a suffragan of the archbishop of Bourges. It is in the jurisdiction of the Cour Royale, or high court of justice of Limoges, and in the fifteenth military division, of which the head-quarters are at Bourges. It sends three members to the Chamber of Deputies.

CREU'SIA. [CIRRIPEDA.]

CREUTZ (Croat. Körös-Varmegye), a county in Croatia, adjoining south and east to the Hungarian counties of Agram and Warasdin. It has an area of about 640 square miles, and the soil under cultivation consists of about 320,500 acres, of which about 143,500 are arable land, and 31,800 vineyards. The population amounts to about 77,500. It contains 2 towns, 1 market town, 266 villages, and 4 prædia or privileged settlements. The county is mountainous and full of woods. It is watererd by the Drave, Glogovnicza, Bednya, and Lesna; the lowlands are fertile, producing corn, maize, tobacco, fruit, &c., and affording good pasture for cattle. Creutz, the chief town, in 46° 1′ N. lat. and 16° 32′ E. long., lies in a plain, on the Glogovnicza, and is surrounded by old ramparts. It contains 637 houses and about 3100 inhabitants, and has two churches and a high-school, as well as a Græco-Catholic ecclesiastical seminary. It is the seat of a Græco-Catholic bishopric and chapter. The other town in this county is Kaproneza, in a plain on the river of that name, in 46° 10′ N. lat. and 16° 49′ E. long. It is defended by strong walls, and a castle, also of some strength. The number of houses is 749, and of inhabitants, about 2600. It has two churches.

CREUZNACH, a minor circle in the Prussian province of Coblenz, bounded by the Rhine and Nassau on the north-east, the grand-duchy of Hesse-Darmstadt on the east, and the Rhenish possessions of Bavaria on the south. Its area is about 200 square miles; it is very hilly in the north-west, where it is traversed by the Hundsrück, but the remainder of the country abounds in pleasant and well-watered valleys. In the south and east it is watered by the Nahe and Simmerbach. The soil is in general fertile, and produces grain, wine, very fine flax, hemp, rape, and clover seed, potatoes, and fruit. Of the land under cultivation nearly 90,000 acres are arable, and the vineyards occupy about 5500. The population, which was 30,685 in 1816, and 45,754 in 1825, amounted to 47,689 in 1831. Creuznach has four towns (Creuznach about 7900; Sobernheim, 2300; Kirn, 1750; and Stromberg, 940), and seventy-nine villages and hamlets. Great numbers of cattle are reared; the mineral productions are freestone, marble, salt, and iron.

CREUZNACH, the chief town, is situated on both banks of the Nahe, which is here traversed by a stone bridge, in the bosom of a rich and delightful country, 49° 51′ N. lat., and 7° 53′ E. long. It is supposed to have been the site of a Roman castrum. It is built in the old style, without any regular plan, and the streets are narrow and crooked; it has two Roman Catholic and two Protestant churches, a synagogue, gymnasium, and hospital. The number of inhabitants was 6506 in 1816, and is at present about 7900. They depend on the traffic in grain, wine, cattle, salt, flax, &c., and on their manufactures, which are chiefly leather, brandy, tobacco, and soap. There are three salt works close to the town; the 'Theodore's,' and 'Carl's Halle,' belonging to the grand-duke of Hesse, and the 'Münster-halle,' to a society at Frankfort; all of them lie on the banks of the Nahe. The Theodorshalle employs about eighty individuals, and produces annually about 1500 tons of fine salt; the other two works yield about 500 more. About two miles from Creuznach is the celebrated burgh of the Rhinegraves of Stein, hence called the 'Rheingrafenstein;' the few remains of this stronghold are situated on a rock of porphyry, which rises 600 feet perpendicularly above the surface of the Nahe, and commands a splendid view. In the vicinity of Creuznach also are the ruins of the 'Ebernburg,' on the left bank of the Alsenz, in which Bucer, Œcolampadius, and Ulrich von Hütten, with other reformers, were afforded an asylum against their persecutors by Francis of Sickingen.

CRE'VIER, JEAN BAPTISTE, born at Paris in 1693, was the son of a journeyman printer. He studied under Rollin, and afterwards became professor of rhetoric in the college of Beauvais. After Rollin's death he undertook to continue his 'Roman History,' of which he wrote eight volumes. He is less diffuse and digressive than his master, though not so pleasing in his style of composition. He also published an edition of Livy, in 6 vols., 4to., 1748, with notes. The work by which he is best known is 'Histoire des Empereurs Romains jusqu'à Constantin', 6 vols., 4to., Paris, 1756. The author has scrupulously adhered to the antient authorities in the statement of facts, but his narrative is rather deficient in interest and force. Though not a critical work, nor entitled to a high rank, it is still a useful compilation. Crévier wrote also 'Histoire de l'Université de Paris,' 7 vols., 12mo., 1761, which is in great measure an abridgment of the larger work of Egasse du Boulay; and 'Rhétorique Française,' 1765, a good work, which has been frequently reprinted. Crévier died at Paris in December, 1765. He bore an excellent private character.

CREWKERNE. [Somersetshire.]

CRICE'TUS. [Muridæ.]

CRICHTON, JAMES, commonly called 'The Admirable,' son of Robert Crichton of Eliock, who was Lord Advocate to King James VI., was born in Scotland in the year 1561. The precise place of his birth is not mentioned, but he received the best part of his education at St. Andrew's, at that time the most celebrated seminary in Scotland, where the illustrious Buchanan was one of his masters. At the early age of fourteen he took his degree of Master of Arts, and was considered a prodigy not only in abilities but in actual attainments. It was the custom of the times for Scotchmen of birth to finish their education abroad, and serve in some foreign army previously to entering that of their own country. When he was only sixteen or seventeen years old (the date cannot be fixed), Crichton's father sent him to the Continent. He had scarcely arrived in Paris, which, whatever may have been its learning, was then a gay and splendid city, famous for jousting, fencing, and dancing, when he publicly challenged all scholars and philosophers to a disputation at the College of Navarre, to be carried on in any one of twelve specified languages, 'in any science, liberal art, discipline, or faculty, whether practical or theoretic,' and, as if to show in how little need he stood of preparation, or how lightly he held his adversaries, he spent the six weeks that elapsed between the challenge and the contest in a continual round of tilting, hunting, and dancing. On the appointed day, however, he is said to have encountered all 'the gravest philosophers and divines,' to have acquitted himself to the astonishment of all who heard him, and to have received the public praises of the president, and four of the most eminent professors. The very next day he appeared at a tilting-match in the Louvre, and carried off the ring from all his accomplished and experienced competitors. Enthusiasm was now at its height, particularly among the ladies of the court, and from the versatility of his talents, his youth, the gracefulness of his manners, and the beauty of his person, he was named *L'Admirable*. After serving two years in the army of Henry III., who was engaged in a civil war with his Huguenot or Protestant subjects, Crichton repaired to Italy, and repeated at Rome, in the presence of the pope and cardinals, the literary challenge and triumph that had gained him so much honour in Paris. From Rome he went to Venice, at which gay city he arrived in a depressed state of spirits. None of his Scottish biographers are very willing to acknowledge the fact, but it appears quite certain that, spite of his noble birth and connexions, he was miserably poor, and became for some time dependent on the bounty and patronage of a Venetian printer—the celebrated Aldus Manutius. After a residence of four months at Venice, where his learning, engaging manners, and various accomplishments excited universal wonder, as is made evident by several Italian writers who were living at the time, and whose lives of him were published, Crichton went to the neighbouring city of Padua, in the learned university of which he reaped fresh honours by Latin poetry, scholastic disputation, an exposition of the errors of Aristotle and his commentators, and (as a playful wind-up of the day's labour) a declamation upon the happiness of ignorance. Another day was fixed for a public disputation in the palace of the bishop of Padua, but this being prevented from taking place, gave some incredulous or envious men the opportunity of asserting that Crichton was a literary impostor, whose acquirements were totally superficial. His reply was a public challenge—the contest, which included the Aristotelian and Platonic philosophies, and the mathematics of the time, was prolonged during three days, before an innumerable concourse of people. His friend Aldus Manutius, who was present at what he calls 'this miraculous encounter,' says he proved completely victorious, and that he was honoured by such a rapture of applause as was never before heard.

Crichton's journeying from university to university to stick up challenges on church-doors and college-pillars, though it is said to have been in accordance with customs not then obsolete, certainly attracted some ridicule among the Italians, for Boccalini, after quoting one of his placards, in which he announces his arrival and his readiness to dispute extemporaneously on all subjects, says that a wit wrote under it, 'and whosoever wishes to see him, let him go to the Falcon inn, where he will be shown,' which is the formula used by showmen for the exhibition of a wild beast, or any other monster. (*Ragguagli di Parnasso.*)

We next hear of Crichton at Mantua, and as the hero of a combat more tragical than those carried on by the tongue or pen. A certain Italian gentleman 'of a mighty, able, nimble, and vigorous body, but by nature fierce, cruel, warlike, and audacious, and superlatively expert and dexterous in the use of his weapon,' was in the habit of going from one city to another to challenge men to fight with cold steel, just as Crichton did to challenge them to scholastic combats. This itinerant gladiator, who had marked his way through Italy with blood, had just arrived in Mantua, and killed three young men, the best swordsmen of that city. By universal consent the Italians were the ablest masters of fence in Europe; a reputation to which they seem still entitled. To encounter a victor among such masters was a stretch of courage, but Crichton, who had studied the sword from his youth, and who had probably improved himself in the use of the rapier in Italy, did not hesitate to challenge the redoubtable bravo. They fought: the young Scotchman was victorious, and the Italian left dead on the spot.

Soon after this the sovereign duke of Mantua engaged Crichton as companion or preceptor to his son Vincenzo Gonzaga, a young man who, according to Muratori, had shown a strong inclination for literature, but who was otherwise of a passionate temper and dissolute manners. (*Annali d' Italia.*) At the court of Mantua Crichton added to his reputation by writing Italian comedies, and playing the principal parts in them himself. His popularity was immense, but of brief duration. He was cut off in his twenty-third year, without leaving any proofs of his genius except a few Latin verses, printed by Aldus Manutius, and the testimonials of undoubted and extreme admiration of several distinguished Italian authors, who were his contemporaries and associates. As he was returning one night from the house of his mistress, and playing and singing as he walked (for he was an accomplished musician), he was attacked by several armed men in masks. One of these he disarmed and seized: the rest took to flight. Upon unmasking his captive he discovered the features of the prince of Mantua. He instantly dropped upon one knee, and presented his sword to his master, who, inflamed by revenge, and, it is supposed, by jealousy, took the weapon and ran him through the body. Some contemporary accounts attribute his death to an accidental midnight brawl, others to a premeditated plan of assassination, but all seem to agree that he fell by the hand of the prince; and a belief, or a popular superstition, prevailed in Italy, that the calamities which befel the house of Gonzaga shortly after were judgments of the Almighty for that foul murder.

Such appear to be the well authenticated points of a wonderful story, that has often been doubted, not only in parts, but almost altogether. It has however been cleared up of late years by the industry and research of Mr. Patrick Fraser Tytler, who produces a mass of contemporary or nearly contemporary evidence. (*Life of James Crichton of Cluny, commonly called the Admirable Crichton; with an Appendix of Original Papers*, 1 vol. 8vo. Edinb. 1819.)

CRICKET, an English game of strength and activity. Formerly it was almost confined to the southern counties: Kent, Sussex, and Surrey more especially, have always been famous for skill in it. Of late years it has spread a good deal in the northern quarter of the island, notwithstanding the obstacles opposed by a wet cold climate, and the general unevenness of the ground. The rules are at once too well known and too complicated to be here explained; they are subject to variations at the pleasure of the Marylebone Club, which meets at Lord's Cricket Ground, St. John's Wood. The laws and decisions of that society are recognised by cricket-players in general, in the same way that the authority of the Jockey Club is held definitive in questions relating to horse-racing. This, which might be called our national game, has long been, and still is, cultivated with much zeal and pride: it is, we believe, of English origin, and played, almost exclusively, by the British, who have carried it into many parts of the world where the climate seems little suited to the exertion which it requires; as for example, Bengal.

CRICKHOWELL. [BRECKNOCKSHIRE.]

CRICKLADE, a market and borough town in the northern extremity of the county of Wilts, in the hundred of Cricklade. The population, in 1831, was 1506. It is situated in a level tract of country, on the south bank of the Isis, 84 miles W.N.W. from London, and 44 N.N.W. from Salisbury. The Thames and Severn canal passes near the town, and a branch canal, which forms a junction between the Wilts and Berkshire canal at Swindon, passes through it. The antiquity of Cricklade appears to be considerable. The name is derived by some writers from the British Cerigwlad, signifying abounding in stones. Others derive it from the Saxon crœcca, brook, and lædian, to empty, the position being near the junction with the Thames of two small streams, the Churn and the Key. An improbable story is related by several antiquarians respecting the existence of a famous school of antient learning at Cricklade, which on that account was originally called *Greek*lade; and it is added that the University of Oxford was formed by an emigration of professors and students from this town. Dr. Stukeley, in his 'Itinerary,' considers it to have been a Roman station; but this perhaps is questionable. In subsequent periods, little of historical interest is recorded, except that in 1016 the town was plundered by Canute. In the parish of St. John are the remains of a priory founded in the reign of Henry III. (Tanner's *Not. Monast.*) It is now used in tenements for the poor. There was formerly an endowed free school, but the endowment is now lost. Two national schools for girls exist, and a charity, yielding 125*l.* a year from 100 acres of land, is appropriated to the apprenticing of poor children. The town consists of two parishes, St. Mary and St. Sampson. St. Mary's church is an antient structure, with vestiges of Norman architecture; in the churchyard is a Gothic cross with canopied niches. The church of St. Sampson is a spacious cruciform edifice, and presents a fine specimen of Gothic architecture. The tower is lofty, surmounted with parapets and pinnacles, and highly ornamented with niches and pedestals. There are two dissenting chapels, and Sunday schools supported by subscription. Cricklade has returned representatives to parliament since the reign of Edward I. In consequence of some notorious instances of bribery, the elective franchise was extended by 22 Geo. 3, c. 31, to the freeholders of several adjoining hundreds. (*Report of the Cricklade Case*, 8vo. 1785.) At present the borough is represented by two members; the number of electors is 2268; the bailiff is the returning-officer. Petty sessions are held by the magistrates once a month, and a court of requests every third Saturday. The market-day is on Saturday, and a fair is held on the 21st of September. One in April, for cattle, has been discontinued.

CRICO'PORA. [MILLEPORIDÆ.]

CRIME AND PUNISHMENT. [BECCARIA.]

CRIMEA lies between 44° 20′ and 46° 10′ N. lat., and between 32° 40′ and 36° 30′ E. long., and forms a part of the Russian government Taurida. Its figure is a quadrilateral, whose sides are respectively directed to the north-east, north-west, south-west, and south-east, and the angles to the cardinal points. From the eastern point however a peninsula stretches out between the Sea of Azof and the Black Sea, terminating on the shores of the Straits of Yenikale. On three sides the peninsula is enclosed by the Black Sea; on the north-east it is washed by the Sea of Azof. Its area may be about 8600 square miles, which is greater than that of Wales by somewhat more than a 1000 square miles. The neck of land by which this peninsula is connected with the continent is about 20 miles long. Towards its northern extremity, at Perecop (called Or-Kapi by the Tartars), it is about 5 miles across. Strabo, who is very accurate in describing this region, estimates it at 40 stadia. At this place there still remains a strong rampart, erected by the Turks, which extends from the Black Sea to the Sivash or Putrid Sea, an arm of the Sea of Azof. It consists of a deep trench, about 12 fathoms wide and 25 feet deep, which is still in good condition, and of a double wall, built of freestone, which however has been somewhat reduced by the effects of time. Five batteries are erected along this line.

Few countries, of equal extent, present a greater variety than the Crimea. The isthmus of Perecop and three-fourths of the peninsula (being the northern part) form an arid plain or steppe, which is occasionally diversified with deeper spots of ground or hollows. The soil varies in quality, but for the most part consists either of sand alone or sand combined with clay. Towards both seas there are numerous salt-lakes, some of which are from 15 to 20 miles in circuit. They are generally divided from the beach by narrow and low strips of land, and in their neighbourhood the country is of a dry, clayey, and saline nature, resembling the steppes on the Caspian Sea. The plain declines imperceptibly towards the lakes, and is destitute of water and wood; but in some parts covered with a grass sward. It is nearly uninhabited.

Along the south-eastern shores a mountainous tract extends from Cape Khersonese to Kaffa; hence to the Straits of Yenikale it is hilly. The greatest width of this tract is about the middle, where it spreads to the southern banks of the river Salgyr, about 40 miles from the coast; but its mean width does not exceed 20 miles. The whole probably does not cover 2000 square miles. That portion of this region which is to the west of the harbours of Sevastopol and Balaklava forms a peninsula called by the Greeks the Heracleotic Chersonesus, from having been colonized by settlers from Heracleia, in Asia Minor. From Cape Khersonese the country gradually rises in a sloping plain, occasionally diversified with hills; the soil is clayey, and in many parts mixed with gravel, and the surface is more or less covered with a dry turf; the higher parts are naked rocks. To the east of Balaklava the heights attain the elevation of mountains, which run like an immense wall from that town to Alushta. The coast here consists of cliffs, generally several hundred feet in height, and forming numerous headlands and dreadful precipices. At a distance of from one to two miles from the coast the mountains attain a height of 2000 feet and upwards. From this rapid slope a few torrents descend, the beds of which are filled by heavy rains or the melting of the snow. The summit of the mountains consists of extensive flats, which may be compared with the *páramos* of the Andes, and sometimes extend several miles, with occasional eminences on them. These mountain-tablelands, called by the Tartars *Yailas*, are only visited by them during hot summers, on account of the rich pastures which they supply for cattle; some of them are covered with snow till the latter end of May. North of the Yailas the mountains gradually descend, forming numerous but narrow lateral ridges, which enclose delicious and sometimes wide valleys, among which that of Baidari has obtained celebrity from the pen of Lady Craven. The ridges by degrees sink down into hills, which terminate in the northern plain.

West of Alushta is the Babugan Yaila, which is nearly as high as the Chatyr-Dag, or Tent Mountain, which stands to the north-east of it, and is separated from it by a considerable depression. A like depression occurs on the east, and divides the Chatyr-Dag from Temirdshi Yaila, which is much less elevated. Thus the Chatyr-Dag with its flat summit appears like an immense table, and on that account is probably called by Strabo *Trapezus*. (vii., 309, Casaub.) On its flat summit rise several eminences, like a tent, from which the name is derived, which is given to the mountain by the Tartars. These summits, which rise 5040 feet above the level of the sea, are the highest mountains in the Crimea. The Chatyr-Dag and the eastern chain, which extends to Kaffa from the Temirdshi Yaila, are more distant from the coast than the western chain, and a number of small streamlets descend from the heights and drain some fine valleys along the sea-coast. Towards Kaffa, the mountains decrease in elevation, and terminate about a mile from the western shores of the open bay on which that town is built.

The country between the bay of Kaffa and the Sivash or Putrid Sea, is a plain very slightly undulating, but it becomes more so in proportion as it proceeds to the east. Near the banks of the strait of Yenikale at Kertsh, the country is traversed by several ridges running nearly south and north, on which numerous craggy points rise to 300 or 400 feet above the sea. Near that town and between it and Yenikale, the peninsula terminates with a rocky though not an elevated shore. This peninsula between the Black Sea and the Sea of Azof is remarkable for its mud volcanoes; of which Pallas particularizes the hill called D'shtube, situate nearly in the centre of the peninsula. In some parts naphtha or petroleum is found.

From this peninsula extends in a north north-west direction a narrow strip of land, which divides the Sivash or Putrid Sea from the Sea of Azof. It is on an average hardly 300 yards wide, upwards of 70 miles long, and very low; it consists towards the south of shelly sand, in which some scattered plants thrive with luxuriance, but farther on the soil exhibits only common sand, more or less consolidated, and of a saline nature. It contains several small salt-lakes, and along its low beach heaps of salt are thrown out by the sea. This narrow tongue, called the isthmus of Arabat, is divided from the Nogay-steppe by a narrow strait, called the strait of Ienitshe or Tonke, and is inhabited only by a few innkeepers; the peasants of eastern Russia bring provisions along this tract to Kaffa, and take back fish.

Numerous rivulets descend from the northern declivity of the mountains, and form several rivers, as the Katshka, Alma and Salghyr, all of which have very broad beds, though in summer they contain very little water and run slowly. But when the snow melts on the Yailas, they become rapid, broad and deep rivers.

The winters are cold and the summers hot. In very severe winters the mercury sometimes sinks 9° below zero, and not only the whole Sea of Azof, together with the straits of Yenikale, but also a great part of the bay of Kaffa is covered with ice strong enough to support men on foot and on horseback. The climate is so unsettled, that it often varies six or eight times in twenty-four hours. The winds are very variable, and bring rain from the west and south-west, mild air and frequent mists from the south, serene dry weather from the east, and cold from the north. In spring the weather is settled, the heat moderate and refreshing, and the nights cold and serene; there is seldom any rain, especially during the prevalence of violent east winds; and unless a considerable fall of rain happens in April and May, an unproductive harvest frequently follows. In summer the thermometer frequently rises to 98°, 100° and even 102°. On the same day, however, it falls sometimes 20° or even 30°. Droughts frequently prevail for several successive years, and dry up the wells and brooks. Few summers pass in which the verdure on the hills is not parched up. Thunder-storms rarely occur, but they are tremendous, and sometimes accompanied by hail-stones and destructive water-spouts. In summer and spring rainy weather seldom continues for twelve or twenty-four hours. In autumn billious fevers prevail. Cold days occur in the middle of October, and are generally accompanied with night frosts, but afterwards the weather again becomes pleasant, and frequently continues mild till December and January.

The crops cultivated in open fields are wheat, rye, barley, oats, maize, spelt, millet, chick-peas, flax, and tobacco. In the gardens are raised melons, water-melons, cucumbers, gourds, artichokes, cabbages, onions, garlic, leeks, brocoli, celery, parsley, carrots, and red beets. The numerous and extensive orchards in the valleys produce pears, apples, quinces, plums, cherries, peaches, apricots, almonds, medlars, pomegranates, mulberries, and nuts. Some of these trees grow also wild on the declivities of the mountains. The forest trees, which cover a great portion of the declivities of the mountains, especially on the northern side, are oak, beech, elms, poplars, lime-trees, maples, ash, and pines (pinus maritima). Of late, great attention has been paid to the cultivation of the vine, of which Pallas enumerates twenty-four kinds. But though many of these grapes are good, the wine is still much inferior to that which is produced in Hungary and France. The camel with two bunches is more numerous than is commonly supposed: there are several thousands of them. Great attention is paid by the Tartarian noblemen to the breeding of horses, and they are of a good kind. Those of the mountainous districts are small, but uncommonly hardy and sure-footed. The horned cattle are of a middling size in the plains, and small in the mountains. There are three varieties of sheep, all of which have a long tail, which for half its length is overgrown with fat and covered with coarse wool. One variety, which pastures on the plain lying along the Black Sea between Koslof and Perecop, produces the celebrated Crimean lamb-skins, of which more than 30,000 are sometimes annually exported to Poland and Germany. Of black lamb-skins more than 50,000 or 60,000 are annually exported. The mountain sheep are smaller, but celebrated for their soft fine wool.

Sturgeons are taken on the shores of the Sea of Azof, in the straits of Yenikale, and in the bay of Kaffa. Caviar is made, and also a little isinglass. Salt, which is the only mineral that is abundant, is found at the bottom of the salt lakes during the summer heat. Besides the salt lakes on the plain, there are some others on the eastern peninsula. Salt in great quantities is exported to Southern Russia, and much is also shipped to Anatolia and Turkey from the ports of Kertsh, Kaffa, and Kolof.

The population of the Crimea falls somewhat short of 300,000. More than two-thirds of its inhabitants are a mixture of Mongols and Turks, and are called Tartars. Those who live on the plain show in their features their Tartar origin; but those in the northern valleys display a strong mixture of Turkish blood, especially the noblemen (*murses*), in whom the Tartar features are entirely obliterated. Besides the Tartars, different other nations are found, Russians and Germans, who have been transplanted in modern times as colonists, and Greeks, who always seem to have formed a portion of the population, but have considerably increased in latter times.

In the interior, at the northern extremity of the hilly country, is the town of Simferopol, or Akmeshed, the capital, not far from the sources of the river Salghyr, with 3000 inhabitants, and that of Karasubazar, with 3700 inhabitants, and some manufactures of morocco and leather. In the mountains is the town of Baktchissarai, the antient residence of the khan. [BAKTCHISSARAI.]

The most frequented harbours are on the south-western coast. Koslow or Eupatoria, with 4000 inhabitants, mostly Tartars and Jews, and a fine mosque, exports salt to Anatolia and Turkey. Sevastopol, formerly Akthiar, with 3000 inhabitants, is a station of ships of war. On the south-eastern coast is Balaklava, with a fine harbour, between high mountains, which however is not much used, and Kaffa. [KAFFA.] On the straits of Yenikale is Kertsh or Kiertsh, a thriving place, with more than 4000 inhabitants. It exports salt, salted fish, and caviar. In its neighbourhood are the extensive ruins of the antient town of Panticapaeum, once the residence of Mithridates. Yenikale, at the entrance of the strait, is a small fortress, with 600 inhabitants. The fortress of Perecop, on the isthmus, has 800 inhabitants.

Manufacturing industry is confined to the preparation of leather and morocco in Baktshissarai, Karasubazar, and Koslof, and to cutlery and sadiers' and shoemakers' work at Baktshissarai. In some places coarse earthenware is made. The Greeks in the neighbourhood of Kaffa extract soda from some saline plants.

The chief exports of the Crimea by sea are salt, wheat, soda, butter, and hides: the imports, raw and manufactured cotton of different kinds; silk stuffs of various patterns and in the eastern fashion; wines of the Archipelago, and the straits of Constantinople; brandy, Turkish leaf-tobacco, and a variety of fresh and dried fruits. To Russia are sent, chiefly by the way of Perecop, salt, grey and black lamb-skins, sheep's and bullocks' hides, wool, camels' hair, leather, hare-skins, wines, walnuts, fruits, together with the dry fruits imported from other parts, and fish. The imports are grain, provisions, iron, and different manufactured goods of Russia.

The Greeks became early acquainted with this peninsula, probably soon after the Ionian Greeks and especially the inhabitants of Miletus had begun to form settlements on the northern shores of Asia Minor, about six centuries before the Christian æra. Panticapaeum is called by Strabo a colony of the Milesians. Besides this place they built Theodosia, now Feodosia or Kaffa, and some other places on the peninsula forming the west side of the strait of Yenikale. They preferred this part of the peninsula, from its containing a large tract fit for agriculture, and producing very rich crops—Strabo says thirty times the seed. It was at one time considered the granary of Greece, especially of Athens, whose territory being of small extent and of indifferent fertility, was unable to maintain its great population by its own produce. At one time Athens annually imported from the Crimea between 300,000 and 400,000 medimni of grain, as Demosthenes informs us, in his Oration against Leptines (c. 9). Strabo says, that in one year the Athenians received 2,100,000 medimni from Theodosia, but the text is evidently corrupt. [BOSPORUS.]

(Strabo, vii.; Pallas; Lyall's *Travels in Russia;* Captain Jones's *Travels in Norway, Sweden, Finland, Russia, and Turkey.*)

CRINOI'DEA. [ENCRINITE.]

CRIOCE'RIDÆ (Leach), a family of Coleopterous insects, of the sub-section Eupoda and section Tetramera, distinguished by the following characters:—mandibles truncated at the apex, or presenting two or three notches: labium generally entire, or but slightly emarginated: antennæ of moderate length, filiform, somewhat thickened towards the apex; the joints mostly of an obconic form; tarsi with the penultimate joint bilobed; femora often thick, especially towards the apex.

The principal genera contained in this family are—*Donacia, Hæmonia, Ptauristes, Crioceris, Zeugophora, Auchenia*, and *Megacelis.*

The species of the genus *Crioceris* have the posterior femora of the same thickness as the others: the antennæ gradually enlarged towards the apex, the joints of which are scarcely longer than broad; the eyes are emarginated on the inner side: the thorax is narrower than the elytra, short, and usually of a somewhat cylindrical form: the elytra are elongate.

About eight species of this genus have been found in England, of which the most common is the *Crioceris Asparagi*, sometimes called the Asparagus Beetle, which is nearly a quarter of an inch in length, and of a blue-black colour; the thorax is red with two black spots; the elytra are yellow, with the suture, two transverse bands, and a spot at the base, black.

This pretty little beetle is found in abundance in the south of England, on asparagus plants: the larvæ are of a greenish hue, resemble little masses of jelly, and inhabit the same situations as the perfect insect; they subsist upon the leaves and soft part of the stalk of the asparagus plant.

CRI'SIA. [CELLARIÆA, vol. vi., p. 404.]

CRISTA'CEA. [CEPHALOPODA, vol. vi., p. 426.]

CRISTELLA'RIA. [CEPHALOPODA, vol. vi., p. 426.]

CRITICISM. Literary and scientific controversies, like the vexatious disputes of common life, arise more frequently from verbal than real causes. These quarrels generally originate in words which, notwithstanding the sameness of their sounds, have different significations and different values; or perhaps, to speak more correctly, are conceived in different senses by the disputants. This arises from the fact of few words being universally understood in tl
sense. Almost every person affixes his own pa
meaning to the words 'virtue,' 'right,' 'r
'idea.' The word 'criticism' is not exempt from a
difficulty. Criticism with some is synonymous wi
sure: others have a different notion of the word. C
properly means an impartial judgment of a subj
element of the word signifying, in its original langu
Greek, *to separate, to distinguish, to judge.* A
objects as there are in the world, so many kind
ticism must there necessarily be. Besides phil
criticism, the object of which is to discover er
readings in texts, to remove interpolations from t
restore to its pristine purity the original text of
and to investigate the style, there is, 1st. General c
such as occurs in impartial accounts of works in
magazines, and other literary productions; 2nd. Æs
criticism; 3rd. Historical criticism; 4th. Philosophi
cism.

With respect to criticism and to the art of disput
well as the ordinary disputes and differences of life,
lowing remark may be worth consideration as te
unite criticism, as a species of wisdom, with one
greatest virtues, toleration. Every subject or obje
to be considered in two different ways: first, abst
or as regards itself; secondly, in connexion with ot
jects or objects: the former is the absolute, the la
relative point of view. A Hottentot beauty, regar
in the first mode, might safely be pronounced u
were the human race entirely composed of Hottent
a beauty would be considered a master-piece of
notwithstanding the resemblance of her physiog
that of a monkey. The writings of the antient phil
are of comparatively little value in themselves,
sidered relatively, they are admirable and everlast
numents of the human intellect of those remote ag
intelligent critic therefore never forgets both m
viewing the subject under investigation; and thus
is opposed to *controversy.* First principles, in whi
author and critic coincide, being agreed on, the mat
has to be examined: thus in a criticism of Oken s
Philosophy, the premiss to be granted would be th
beginning nothing existed but æther, out of whic
grees everything arose. In poetry it is requisite
tain the object of the author, whether the poet m
with Crabbe, Goethe, &c., to portray human lif
this or that aspect; or, as with Schiller, &c., to d
the ideal. Criticism thus understood will not de
into a mere captious habit of finding fault, nor wi
tation assume the appearance of a quarrel.

In philosophy the word 'critical' signifies that
of reasoning which is opposed to 'dogmatism.'
matist maintains an assertion without proof; the
inquirer not only endeavours to prove every
which he makes, considering fully both sides
subject, but also commences his investigation by
lysis of the powers of the human mind, in order to
what can be known and what cannot. Upon this
Kant's celebrated work, 'Kritik der Reinen V
or 'Criticism of pure Reason,' was written.

Criticism must not be confounded with sceptic
object of which is to show that truth is not attain
philosophical inquiry.

CROATIA, called by the natives '**HORV'AT**
ZAG,' comprising several countries and districts
southern part of Austria, has the title of kingdom,
the greater part is now incorporated with that of Hu
which it forms the south-western division. It lies
44° 5′ and 46° 25′ N. lat., and 14° 20′ and 17° 25′
and extends in a north-easterly direction from the s
the Adriatic to the banks of the Drave (Drau) a
It is bounded on the north by Lower Styria and H
on the east by Sclavonia; on the south by Turkish
and Dalmatia; and on the west by the kingdom o
Croatia has the following subdivisions:

		Square miles.	Inhabitants.	Capital.
N.W.	The county of Agram......	873	385,000	Agram (
N.	The county of Warasdin ...	718	126,000	Warasdi
N.E.	The county of Creutz	634	77,600	Creutz
W.	The litorale of Hungary ...	130	27,600	Fiume
S.	The military frontiers	5754	459,700	Zeugg
E.	The generalate of Warasdin	1415	111,000	Bellovar
		9524	1,186,900	

Croatia contains 7 towns, 16 market-towns, 1680 villages, and 7 prædia.

The surface of Croatia is extremely irregular. It is traversed by chains of mountains, chiefly continuations of the Julian Alps, is intersected with deep valleys, and also contains extensive plains. The loftiest ridge, that of the Velebich, is in the southern part of the country, and extends for about 70 miles from Zermanya to Zeugg. Its general altitude is from 3000 to 4000 feet: its highest summits are the Badany, which is 4164 feet, and the Velika Viszochicza, 4338 feet above the level of the sea. The second chain, called the Capella, likewise commences in the south-western extremity of Croatia, and runs towards the north-east to the banks of the Unna: it exceeds the Velebich both in breadth and length, being above 80 miles long; and the elevation of its highest summit, the Plessioicza, on which the snow scarcely melts throughout the year, is more than 5550 feet above the sea. The mountains which compose the chain from the banks of the Kulpa to those of the Unna are much lower and less rugged. Towards the Save they gradually decline, and at its confluence with the Kulpa terminate in a plain.

The greater part of these mountains consist of limestone, with various kinds of beautiful marble, porphyry, serpentine, &c. which furnish excellent materials for building; all the bridges and parapets of the great 'Josephine Road,' and most of the houses at Fiume, Zeugg, and Porto Ré, are constructed with this stone. The most common is a blackish grey marble, which emits a fetid smell on being rubbed, and when portions fall down from the mountains, diffuses a highly offensive odour throughout the neighbourhood.

Many of the valleys, especially on the southern ridge, are entirely closed, and the streams which traverse them, not having a vent, find their way to different rivers by subterraneous channels, and often inundate the surrounding country. Among the most striking of these valleys are those of Korbavia and Licca, which are inhabited by a half-savage race, and abound in picturesque waterfalls. The Szluinchicza forms above forty beautiful cascades.

Besides its two boundary rivers, the Drave and the Unna, Croatia is watered by many other rivers and streams, of which the Save only does not rise within its confines; the others take their rise in the country; such as the Kulpa, Longa, Krapina, Korana, Odra, &c. nearly all of which flow into the Drave or Save, except the Zermanya and Fiumara (or Reka), which fall into the Adriatic. Croatia contains many mineral springs, which possess medicinal properties. It is however poor in metallic ores, except iron-stone, which occurs in great abundance in several places. Copper has been obtained for centuries near Czambor, the mines of which yield annually about 400 tons. Coal is found in various parts; as well as sulphur, lead, salt, &c.; occasionally also silver; gold is obtained from the sand of several of the rivers, especially the Drave.

The climate of Croatia varies considerably in different parts. The southern and more sheltered districts, such as those of Zermanya, and the narrow tract between the mountains and the coast about the gulf of Guarnero, which are defended against the north wind, enjoy an Italian climate, and produce the olive, fig, grape and almond. Here the vintage takes place in August, but in the western highlands beyond the Kulpa, the harvest does not commence till the end of August or beginning of September, when the snow begins to fall, which does not melt till April or May. On the higher summits it frequently lies the whole summer. But even in the southern regions, the winter is very severe, owing to the vicinity of the high Alps.

The scourge of this country is the wind called Bora or Bura, which blows from the north or north-east, and generally sets in between seven and eight A. M. and ceases at four or five P. M. It is accompanied by excessive cold, and blows with such violence that large stones are carried by it to a great distance. Malte Brun says that the district of Rodaicza is rendered uninhabitable and nearly inaccessible by it. There is also a very hot south or south-west wind, called Jug, which blows from Africa, but does not set in at any stated times.

The eastern and northern parts of Croatia, which are more level and less mountainous, and especially the parts watered by the Drave and Save, are very fertile in various kinds of grain, particularly barley, maize, and oats; the soil is also very favourable for fruits, among which the Damascene plum furnishes the favourite drink of the Croatians Croatia has immense forests of oak and beech. Flax, hemp, and tobacco are only grown in sufficient quantity for domestic consumption. Croatia produces about 3,700,000 metzen of various sorts of grain, and about 400,000 kilderkins of wine. Horticulture and gardening are very little attended to; the same may be said of the rearing of horned cattle and horses, except in the counties of Agram and Warasdin. The flocks are neither numerous nor of choice breeds; but an establishment for the improvement of sheep of superior wool has lately been formed at Merkopaly, which promises to be successful. Considerable herds of swine are reared, for which the forests afford plenty of food. There are likewise extensive fisheries; and much wax and honey are produced. Timber is obtained in abundance, as the whole country abounds in forests. Only a very small portion of the inhabitants are engaged in manufactures, and these are of the rudest description. As Croatia does not raise more produce than suffices for its inhabitants, its commerce is chiefly confined to the transit trade. The three great roads for trade are the Louisa, from Fiume to Carstadt, and the Caroline and Josephine, leading into Illyria and Bosnia.

The inhabitants profess the Roman Catholic and Greco-Catholic religions. The adherents of the former are under the bishop of Agram, one of the richest prelates of Hungary, and those of the latter have their own bishop, who resides at Creutz. The public system of education is that of the national schools, which are divided into elementary, head, and normal. There are two gymnasia at Agram and Warasdin, and a superior academy or college at Agram, which has also a seminary of theology for candidates for orders in the Roman Catholic and Greco-Catholic church.

The Croatian language is a dialect of the Sclavonian; it nearly resembles the Bohemian and Moravian, and of all the Illyrian languages bears the greatest affinity to the Polish.

The antient inhabitants of Croatia were the Pannonians, after the conquest of whom by Augustus it became a province of Illyria. The Goths took possession of it A. D. 489, then the Avares or Abares, and in 640 the Croatians, a tribe of the Wends from Bohemia, who were antiently called Horwather, Hrowathes or Chrobates, settled in it, and gave their name to the country. They subdued the former inhabitants of Illyria and Noricum, and being reinforced by bodies of their countrymen, they founded the Duchies (or in their idiom *Zupanies*) of Carinthia, Friuli, Liburnia, or Croatia Proper, Jadra in Dalmatia, Sclavonia, &c. These small states submitted to Charlemagne, but they generally allied themselves with the Greek emperors, although they continued to acknowledge the supremacy of the church of Rome. Their first Archizupan of whom history makes mention, is Crescimer, who lived in the tenth century, and whose son Dircislav I. took the title of king of Croatia, which then extended over the western part of Dalmatia and Bosnia; its capital, called Biograd, appears to have been situated on the shores of the Adriatic, at the place called by the Venetians Zara Vecchia, although Büsching and some other authorities fix upon the modern Biograd, Belligrad, or Bielgrad, on the small river Pliva, as its site. Towards the year 1100 Croatia was incorporated with Hungary.

After the middle of the fifteenth century it suffered greatly from the incursions of the Turks, but the Croatians being a warlike people, ravaged in their turn the Ottoman territories, and returned to their villages laden with spoils. Croatia was afterwards annexed to the Austrian empire, and, together with Sclavonia, Dalmatia, and some parts of Hungary, was governed by a special board at Vienna under the common title of States of Illyria. More recently Croatia has preserved the name only of a kingdom, Agram, Warasdin, and the Litorale having been incorporated with Hungary, and the Generalats of Creutz and St. George with the Military Frontiers, having each of them its distinct military jurisdiction.

Although brought into more regular discipline by the Austrian government, the Croatians still retain their taste for war. Those who live at some distance from the Turkish frontiers have adopted more industrious habits. Their untutored state is accompanied by many traits of virtue and generosity, and great fidelity to their sovereign. Notwithstanding their revolt against Austria in 1755, on account of certain innovations, their despair was indescribable when they found themselves united to France in 1809. Their dwellings are merely large barns, without either window or chimney, where the family and the swine lodge under the same roof.

CROCKET, an ornament of very frequent use in Gothic architecture. It consists of leafy buds growing out of the angular sides of pinnacles and the label moulding of windows and doors. There are no examples of crockets in the Norman or arched style. In the early pointed style they are meagre, as in Lincoln cathedral, but afterwards they become fuller, and a more natural representation of a bursting bud. The later examples however are larger, and have not so much the appearance of nature.

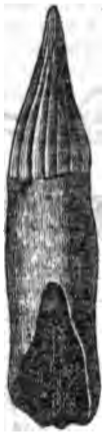
CROCODILE, CROCODILE-TRIBE, CROCODI'LIDÆ, a family of *Saurians*, comprising the largest living forms of that order of reptiles. Duméril and others distinguish the family by the appellation of Aspidiot (shielded) Saurians; while many modern zoologists have considered them as forming a particular order. They form the *Loricata* of Merrem and Fitzinger, and the *Emydosaurians* of De Blainville.

Cuvier in his 'Règne Animal' describes the peculiarities of the family. The tail is flattened at the sides; there are five anterior and four posterior toes, of which the three inner ones only on each foot are armed with claws; all the toes are more or less joined by membranes. There is a single row of pointed teeth in each jaw, and the tongue is fleshy, flat, and attached very nearly up to the edges, which made the antients believe that the crocodile wanted that organ. The intromittent male organ of generation is single; the opening of the vent longitudinal. The back and tail are covered by great and strong squared scales, elevated into a ridge on their middle. There is a deeply dentilated crest on the tail, at the base of which the crest becomes double. The scales of the belly are squared, delicate, and smooth. The nostrils are opened at the end of the muzzle by two small crescent-shaped slits, closed by small valves, and lead by a long and straight canal pierced in the palatine and sphenoidal bones to the bottom of the back part of the mouth. As the lower jaw is prolonged behind the skull, the upper jaw has the appearance of mobility, and so the antients wrote; but it only moves in concert with the whole of the head. The external ear is shut at will by means of two fleshy lips; and the eye has three lids. Under the throat are two small glandular orifices, whence issues a musky secretion.

The vertebræ of the neck bear upon each other by means of small false ribs, which render lateral motion difficult. Crocodiles, therefore, change their direction not without trouble, and they may be easily avoided by doubling, and escaping while they are employed in the laborious operation of turning round. They have no true clavicles *; but their coracoïd apophyses are attached to the sternum, as in all the other Saurians. Besides the ordinary and the false ribs, there are a set which protect the abdomen without reaching up to the spine, and which appear to be produced by the ossification of the tendinous portions of the *recti* muscles. Their lungs are not sunk in the abdomen like those of other reptiles, and there are fleshy fibres adhering to the part of the peritoneum which covers the liver, and which present the appearance of a diaphragm, which, joined to their trilocular heart, where the blood which comes from the lungs is not mingled with that venous portion of it which comes from the body so completely as it is in the other reptiles, slightly approximates the crocodiles to the warm-blooded quadrupeds. The auditory bone (*caisse*) and the pterygoid apophyses are fixed to the skull as in the tortoises.

The eggs of the crocodiles are hard, and as large as those of the goose †; and these reptiles are considered to be animals in which the extremes of size, taking that of the newly-hatched young and that of the full grown adult as the most remote points, present the widest difference ‡. The females guard their eggs, and when they are hatched take care of the young during some months. (Cuvier.)

The dentition of the crocodiles is peculiar. The teeth are numerous, large, of unequal length, conical, hollow at the base, disposed in a single row, and planted in the thickness of the edges of the superior and inferior maxillary bones, in separate cavities which may be considered as true alveoli. These teeth are hollowed at the base in such a manner as to serve for the case or sheath of the germ of the tooth destined to replace it, and which is
greater volume; so that, in crocodiles, the numb
teeth does not vary with age as in many other anim



[Tooth of crocodile, showing the incipient absorption of the h
cone from the effect of the rising pressure of the advancing tooth.]

Great solidity and strength are the results of th
gomphosis, and the *alveoli* are moreover directed
from front to rear. The bony edges of the jaws
these insulated teeth spring, are covered by a kind
Another peculiarity of admirable adaptation to th
sities of the animal, may be observed in the interi
mouth of the crocodiles. Their palatine vault i
flat, and is not pierced by the extremities of the nas
as in the majority of other reptiles. The poster
apertures open in the *pharynx* behind the *velu*
which is sufficiently long to overspread that porti
roof which is in front of the orifice of the *glott*
are probably the only reptiles which have a true
that is to say, a vestibule common to the posterior
the mouth, the *larynx*, and the *œsophagus*. Thi
mation, joined to the muscular structure of the to
a peculiar expansion of the body of the *os hyöides*,
a kind of cartilaginous disk or valve, which can
and applied to the *velum palati* above, so as to p
glottis, to which it serves the office performed b
glottis in mammifers, while it confers on the repti
liar power of deglutition and respiration, of the
consequence to its economy when it is below the
the water and has seized its prey in that situation;
the muzzle alone is above the surface, in carryi
spiration.

The following is a summary of the

Character of the Family.—Body depressed, e
protected on the back with solid and carinated s
or shields; *tail* longer than the trunk, compressed
annulated, and furnished with crests above; *feet* f
the toes of the *posterior* feet united by a natat
brane: each foot with three claws only; *head*
elongated into a muzzle, in front of which are th
approximated upon a fleshy tubercle, furnished w
able suckers (*soupapes*): gape of the mouth exte
yond the skull; *tongue* fleshy, adherent, entire,
tractile; *teeth* conical, simple, hollowed at the
towards the root, unequal in length, but placed i
row; *male genital organ* simple, having its exit
cloaca, which opens longitudinally. (Duméril et

From the first cut in the following page a gene
ledge of the osseous structure of the crocodiles m
rived; and, from the second, a fair notion of the
appearance of the adult reptile.

Geographical Distribution.—Of the three gene
genera which compose the family, no living specie
in Europe,* nor has any been yet detected in A
The first of these genera, *Alligator*, is peculiar to
the second, *Crocodilus*, is distributed in the Old
World; and the third, *Gavialis*, seems to be limi
Ganges, and the other large rivers of Continental

Asia, besides the Gavial of the Ganges, produc
three true crocodiles, viz., *Crocodilus vulgaris*,
Galeatus, (*C. Siamensis*, Schneid.; *C. Siamensi*
and *Crocodilus biporcatus*. Siam seems to be
cipal, if not the only locality, where the first of

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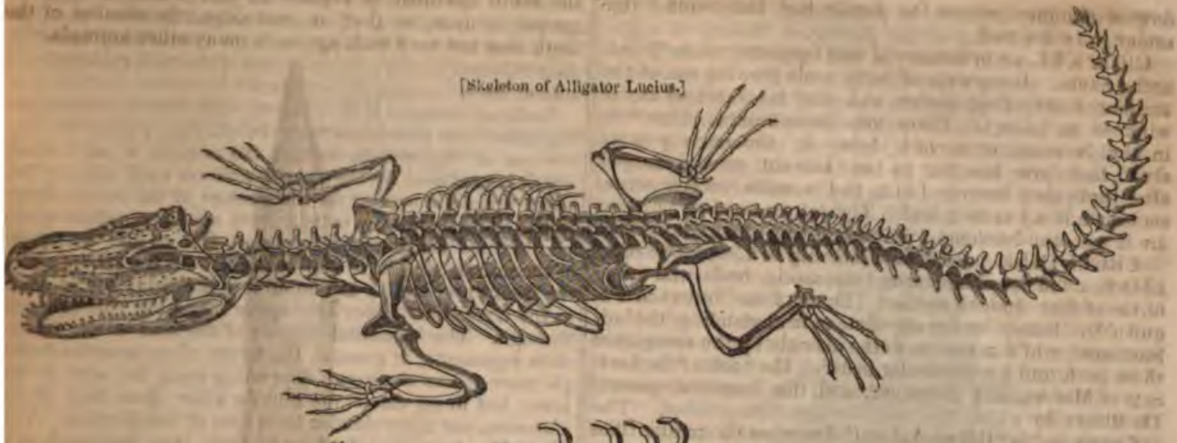
* Cuvier observes, that they are the only Saurians which want the clavicular bones.

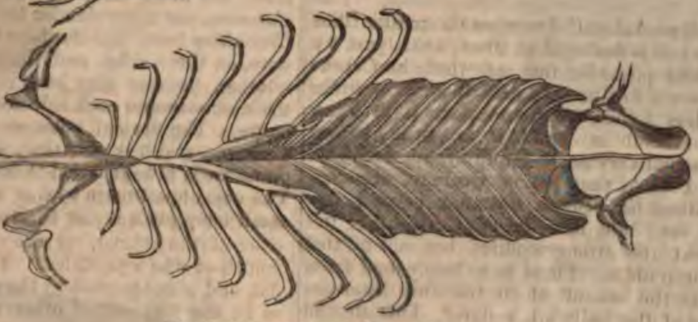
† But they are of a different shape, oblong rather than oval.

‡ An observation made by Herodotus, ii. 68.

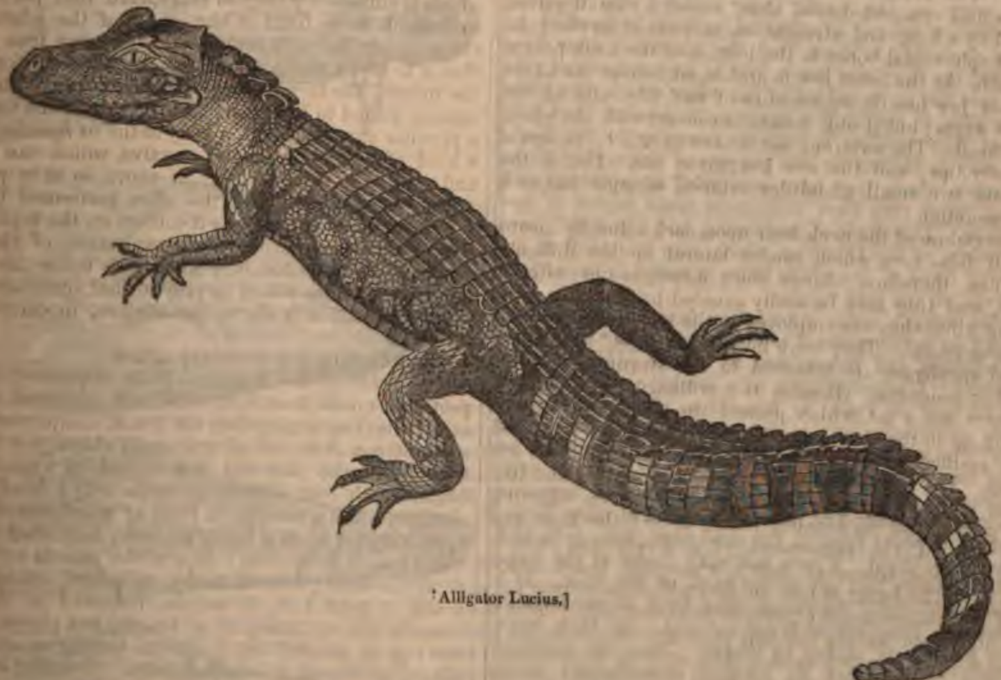
* Malte Brun (*Syst. Geog.*, vol. viii., p. 193) states, that a cro
preserved at Lyons that was taken from the Rhone about two c
but, as Mr. Lyell observes, no particulars are given.



[Skeleton of Alligator Lucius.]



[Trunk of the same: ventral aspect.]



[Alligator Lucius.]

tline of the head and anterior parts of Alligator Lucius seen from above.]

n found; while the other two appear to be natives of e rivers which have their mouths in the Indian Ocean the Ganges.

Africa, where neither Caimans (*Alligator*) nor Gavials e yet been discovered, is the native country of the *Cro-ile à bouclier*, and *Crocodilus vulgaris*: it may also be locality of *Crocodilus planirostris* of Graves and of y (*Crocodilus Gravesii*, Bory de St. Vincent); and *Cro-ilus intermedius* of Graves and of Gray (*Crocodilus rnei*, Bory de St. Vincent), though their geographical position does not seem to be determined: these may perhaps come from the coast of Guinea. The only part of Africa whence the *Crocodile à bouclier* has been received is Sierra Leone; while *Crocodilus vulgaris* seems to be spread over the whole of Africa, and is also an inhabitant of Madagascar. Numbers have been taken in the Nile, and one in the river Senegal. (Duméril et Bibron.)

America is most fruitful in crocodiles, and possesses more species than Asia and Africa put together, seven in all, viz., five species of *Alligator*, and two of *Crocodilus*. True crocodiles have never been detected on the Continent. *Crocodilus acutus* has been found at Martinique and St. Domingo, and *Crocodilus rhombifer* at Cuba. The northern part of America is inhabited by one species only, *Alligator Lucius*, while four species, viz., *Alligator palpebrosus*, *Alligator Sclerops*, *Alligator punctulatus*, and *Alligator cynocephalus*, inhabit the south. (Duméril et Bibron.)

The late Mr. Bennett, in September, 1835, called the attention of a meeting of the Zoological Society to a specimen of a crocodile which he had regarded, while it was living in the Society's Gardens, as referrible, on account of the length of its head and the extent of the shielding at the back of its neck, to *Crocodilus cataphractus*, Cuv. A more close examination of it, however, subsequently to its death, had shown him that its head was still more prolonged than that part is described to be in *Crocodilus cataphractus*, its length being to its breadth as 3 to 1, instead of as 2½ to 1: it was also deficient of the second post-occipital series of four small plates noticed as occurring in *Crocodilus cataphractus*, and he characterized the species under the name of *Crocodilus leptorhynchus*. It came from Fernando Po, and Mr. Bennett observed, that notwithstanding the approximation of this species to the Gavials by the elongation of its jaws, and by the extent to which the back of the neck is protected by bony plates, it has all the essential generic characters by which the crocodiles are distinguished. The two posterior pairs of nuchal plates were much smaller than the two pairs anterior to them. (*Zool. Proc.*, 1835, part 3.)

Habits, Reproduction, &c.—Cuvier says that the *Crocodilidæ* inhabit fresh water, that they cannot swallow while in the water, but drown their prey, and place it in some nook under water, where they suffer it to putrefy before they eat it. This account seems to require some modification. Mr. Lyell, in his 'Principles of Geology,' observes that the larger Gangetic species descends beyond the brackish water of the Delta into the sea: and other instances are recorded of the true crocodiles (but not of the alligators) frequenting the mouths of large rivers, and even passing between different islands at considerable distances from each other. (ALLIGATOR, vol. i. p. 350.) This should be remembered by geologists. Then, as to their inability to swallow while in the water, those authors who describe their collective fishing expeditions, entirely contradict it. True it is, according to them, that the alligators, after they have seized the fish from below, rise to the surface and toss the fish into the air to get rid of the water which they have taken in with it, catching it again in its descent: but it is clear that they swallow it without resorting to the land, though they go thither for the purpose of devouring those land animals which they have succeeded in capturing and drowning, after they have undergone some degree of decomposition. This mode of proceeding, and a general view of the habits of the Caimans, which may be taken as an example of those of the whole tribe, is stated in the article ALLIGATOR, in the first volume.

We here subjoin some information from an eye-witness, M. Ricord, as to the mode of reproduction of the crocodiles of St. Domingo, and transmitted by him to MM. Duméril and Bibron. 'L'accouplement m' a semblé se faire de préférence au bord de l'eau; la femelle se place sur le coté, et tombe quelquefois sur le dos, ainsi que j'ai pu le voir une fois; l'intromission dure assez long temps, puis ils se plongent tous deux dans l'eau.' 'The laying of the eggs takes place in April and May, and the number amounts from twenty to twenty-five, more or less, laid at many times. The female deposits them in the sand with little care, and scarcely covers them. I have met with them in the lime which the masons had left on the bank of the river. If I have reckoned right, the young come forth on the fortieth day, when the temperature is not too cold. At their birth they are five or six inches in length. They are hatched alone, and as they can do without nourishment while coming out of the egg, the female is in no haste to bring it to them: she leads them towards the water and into the mud, and disgorges for them half-digested food. The male takes no account of them.' The young preserve for some time the umbilical mark or cicatrice on the abdomen, whereby the vitellus was absorbed.

Position in the animal series. The *Crocodilidæ* are generally considered as forming a natural passage from the *Saurians* to the *Chelonians*, the last genera of which, in certain points of their conformation and habits, approximate nearly to the family under consideration.

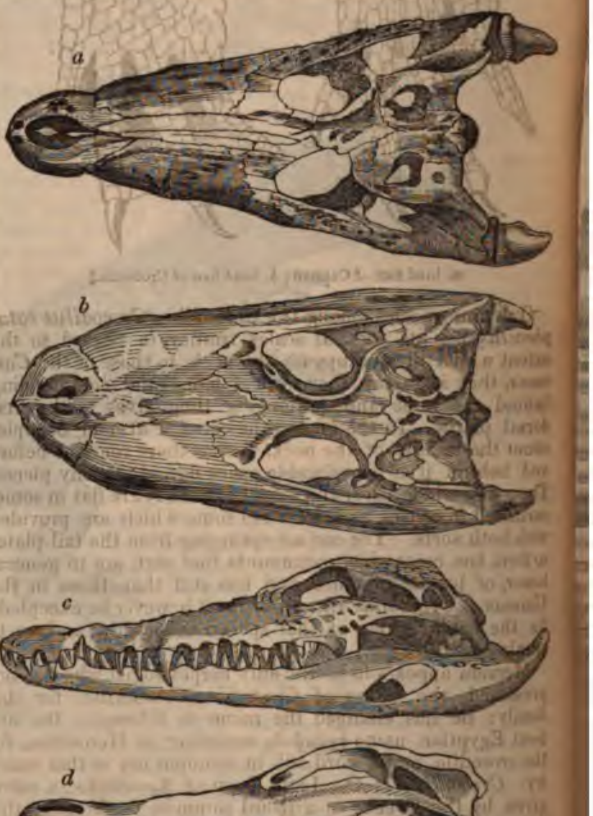
Genera. Alligator.

(See the Article, vol. i. p. 349.)

Crocodilus.

Muzzle oblong and depressed; *teeth* unequal, the front teeth of the lower jaw at a certain age pierce the upper jaw, the fourth on each side, which are the longest, pass into lateral notches of the upper jaw when the mouth is shut, and are not lodged in hollows. The *skull* behind the eyes has two large oval holes. The *hind feet* have a dentilated crest on their external border; the intervals of the toes, the external ones at least, are entirely palmated.

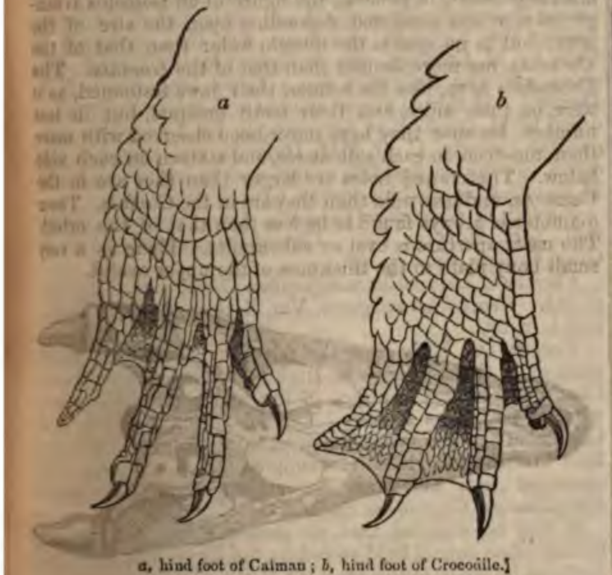
Nothing, observe MM. Duméril and Bibron, better distinguishes the *Crocodiles* from the *Alligators* than the narrowness of the muzzle behind the nostrils, a narrowness which is produced by the deep notch on each side of the upper mandible serving for the passage of the fourth lower tooth. The *Gavials*, it is true, have similar notches, which are destined for the same purpose. But at the extremity of the muzzle they have also two others for the reception of the front lower teeth; in lieu of this the front lower teeth in the *Crocodiles* pierce the upper mandible through and through. The horizontal contour of the head of the *Crocodiles* represents, in general, the figure of an isosceles triangle more or less elongated, depending upon the size of the jaws; but in no case is the muzzle wider than that of the *Caimans*, nor more slender than that of the *Gavials*. The *Crocodiles* have, like the former, their jaws festooned, as it were, on their sides, and their teeth unequal, but in less number, because they have never been observed with more than nineteen on each side above, and sixteen on each side below. The cranial holes are larger than they are in the *Caimans*, and less wide than they are in the *Gavials*. Their diameter is always found to be less than that of the orbits. The nasal aperture is oval or subcircular. There is a very small bony plate in the thickness of the upper eyelid.



a, skull of Crocodilus vulgaris, seen from above; *b*, skull of Alligator Lucius, same view; *c*, profile of skull of Crocodilus vulgaris; *d*, profile of skull of Alligator Lucius.

The same remark, as to the length of the head in proportion to its width at the three principal epochs of life, applies to the *Caimans* as well as to the *Crocodiles*. Thus, at the earliest age, it is only a little longer than it is wide; in middle age, its length is about double its width; afterwards, and when the animal may be considered adult, its longitudinal diameter is only three quarters, or even one half greater than its transversal diameter. The head of the *Crocodiles*, instead of possessing the smoothness or rugosity which marks the young and middle aged, generally becomes very rugged in proportion as the animals grow old. If, for example, it offered simple and regularly disposed carinations, these become ramified or divided into insulated protuberances, which completely change the physiognomy that the species presented in its two first ages. This change is particularly remarkable in *Crocodilus biporcatus.*

The greater part of the Saurians of this group have the hind toes, the three external ones at least, united to their extremity by a wide natatory membrane. There are indeed some nevertheless in which it is shorter, and one species, *Crocodilus rhombifer,* wants the membrane almost entirely, in the interval of the two inner toes. With about two exceptions, all the *Crocodiles* have the posterior border of the leg furnished with a dentilated crest, formed of flattened scales. The two species which are said not to present this character are *Crocodilus Gravesii* and *Crocodilus rhombifer.*



a, hind foot of Caiman ; *b*, hind foot of Crocodile.]

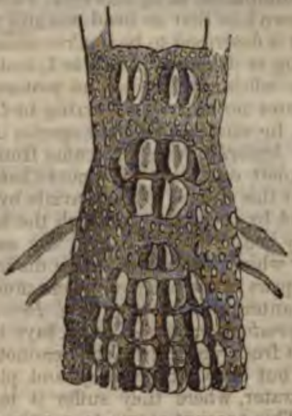
Only one species among the *Crocodiles* (*Crocodilus cataphractus*) has its cervical scales similar, in regard to the extent which they occupy on the neck, to those of the *Caimans,* that is to say, they form a long band commencing behind the nape and prolonging themselves to the first dorsal plates. In the others, the cervical armour occupies about the middle of the neck, so that there remains before and behind it a considerable space devoid of bony pieces. The scales which cover the sides of the body are flat in some, carinated in others, and there are some which are provided with both sorts. The *carinæ* springing from the tail-plates to form the crest which surmounts that part, are in general lower, of less consistence, and less stiff than those in the *Caimans. Crocodilus rhombifer* must however be excepted; for the caudal crest of that species is very low, and, so to speak, osseous.

Merrem appears to be the only herpetologist who has not preserved the name of *Crocodile* (*Crocodilus*) for this family: he has changed the name to *Champse,* the antient Egyptian name (χάμψα), according to Herodotus, for the crocodile, and a word still in common use in that country. *Crocodilus* is the Latin form of Κροκόδειλος, a name given by the Greeks to a lizard common in Greece: this name, it appears, they afterwards applied to the crocodile of Egypt, when they travelled into that country. (Herodot., ii. 69.)

Zoologists seem to be agreed in allowing that there is scarcely any genus of *Reptiles* the species of which are so difficult to be distinguished from each other as those of *Crocodilus.* This task, observe MM. Duméril and Bibron, is become comparatively easy, thanks to the labours of Cuvier, Geoffroy St. Hilaire, and others, but still all difficulty is not removed. MM. Duméril and Bibron, after extensive examination, as they state, reduce the species to eight; and even of these, they appear to consider some, *Crocodilus Gravesii* and *Crocodilus galeatus,* for example, doubtful. We select as an example *Crocodilus vulgaris.*

Description. Jaws not elongated into a narrow beak. Hind feet largely palmated; and with a festooned crest along their posterior border. Six cervical plates. Dorsal scutcheons or shields quadrangular, and surmounted by six longitudinal rows of *carinæ* but little elevated.

Syn. *Crocodilus amphibius Niloticus,* Loch. *Le Crocodile du Nil.* Daud. *Crocodilus vulgaris,* Cuv. *Crocodilus vulgaris,* Tiedm. *Le Crocodile vulgaire,* Cuv. *The common Crocodile,* Griff. Anim. Kingd.



[Nuchal and cervical plates, &c. of Crocodilus vulgaris.]

MM. Duméril and Bibron make four varieties of this species. Our limits will only allow us room for a lengthened description of the first. Variety A. Muzzle a little narrowed, rather flat than arched across, with small hollows and channellings, which are now and then worm-shaped, on its surface. Table of the skull entirely flat. Back green, speckled with black: two or three oblique bands of the last-mentioned colour on each flank.

Syn. *Crocodilus vulgaris,* Geoff. Ann. Mus., tom. x. p. 67. Descript. Egyp. (Hist. Nat.) tom. i. p. 8. Atlas, pl. 2, fig. 1, 2. *Crocodilus vulgaris,* Merr. Amph., p. 37, spec. 9. *Crocodilus Chamses,* Bory de Saint Vinc., Dict. Clas., tom. v. p. 105. *Crocodilus vulgaris,* Geoff., Crocod. d'Egypte, p. 159. *Crocodilus lacunosus,* Geoff., Crocod. d'Egypte, p. 167. *Crocodilus vulgaris,* Gray, Synops. Rept., part i. p. 57, spec. 1.

This, as well as the following variety, is that to which those individuals whose jaws are the least narrowed belong. The jaws have not, indeed, the same width in all, but it may be said generally, that their width, when measured at the ninth upper tooth, is only one-seventh of the length of the head measured from the end of the nose to the occiput. The table of the cranium is flat: its form is quadrilateral, but a little wider than it is long, and the anterior border is rather narrower than the posterior border, which is not exactly rectilinear; for it presents two curvatures of the same length, the concavity of which is inside. The post-orbito-cranial holes are large and oval: their internal border is somewhat raised into a ridge. The inter-ocular space is hollowed into a sort of gutter. There are some individuals of this variety whose upper mandible presents a nearly flat surface, that is to say, the extreme edge of its contour is the only part which declines towards the lower jaw. It sometimes happens, too, that the mesio-longitudinal region is, for a certain part of its length, slightly concave. The same individuals are, besides, distinguished by having the ridges which form their internal orbital borders continued in front of the eyes so as to form a lozenge-like figure open at its anterior and posterior angles. The mandibular surface is nearly unbroken, or, at most, presents small hollows, considerably like those which are to be seen on the carapace of the *Gymnopods* or *Trionyx.* The mummied individual on which M. Geoffroy founded his *Crocodilus complanatus,* but which MM. Duméril and Bibron regard as being clearly specimens of *Crocodilus vulgaris,* is remarkable for this condition.

There are other *Crocodili vulgares* of the variety A, whose upper jaw is slightly arched across its posterior half, which presents on its mesial and longitudinal region a swelling more or less marked. In these the præorbital ridges are scarcely perceptible, and the inequalities on the surface of their muzzle are produced by numerous hollows, simply longitudinal or vermiculiform. As an example of this group MM. Duméril and Bibron refer to the individual brought from Egypt by M. Geoffroy, and which both Cuvier and himself have taken as the type of *Crocodilus vulgaris*

[Crocodilus vulgaris.]

All the individuals belonging to the first variety seen by MM. Duméril and Bibron present a strong protuberance upon the upper mandible above the ninth tooth; and, on each side of the muzzle, behind the nasal hole, a longitudinal swelling directed obliquely inwards. The edges of the jaws are strongly festooned; the teeth with which they are armed amount to thirty-six in the upper mandible, eighteen on each side, and thirty in the lower jaw, fifteen on the right side and the same number on the left. The largest of the teeth are the third and the ninth above; the first, fourth, and eleventh below.

The length of the posterior limbs is equal to the extent of the body between the shoulder and the thigh. The anterior limbs are one-third less, and have the toes entirely free. The hind toes are united by a natatory membrane.

Behind the occiput there are two pairs of scutcheons or shields placed across the nape, one on the right, the other on the left, of the mesio-longitudinal line. They are oval and strongly carinated. There are individuals which have only two of these scutcheons, and others which have three; but the proper number, and that presented by the greatest number of examples seen by MM. Duméril and Bibron, is four. After the nuchal scutcheons come two others, much smaller, which are placed one on each side of the neck, rather near the cervical shield. The plates which compose this are six in number, forming two transverse rows, one of four a little arched, the other of two. Of these six plates, which are squared or trapezoid, the two middle ones of the first rank are the largest, and the two lateral ones the smallest: their *carina* is strong and moderately elevated.

From sixteen to eighteen rows of bony scutcheons may be counted on the upper part of the body, from the shoulders to the origin of the tail. When there are seventeen or eighteen, the first is almost always composed of two scutcheons only; but in general four may be counted in the first row, from six to ten or eleven in the following rows, and four only in the last rows. The back presents six longitudinal rows of *carinæ*, but of these the two external ones are much shorter than the others. The plates which support the *carinæ* of these two external rows are of a sub-oval form. Those of the middle are four-sided, wider than they are long: those of the other two are squared. The *carinæ* of the two middle series are lower than the others. To the right and left of these six rows of carinated dorsal plates, there are four or five others smaller and oval, which are not always disposed sufficiently regularly to form a band parallel to that on the outside of which it is placed.

The tail is surrounded by from twenty-six to thirty-eight scaly rings. The crest which surmounts it is double, sometimes as far as the fifteenth, sometimes as far as the seventeenth: it is delicate, flexible, and deeply dentilated. The caudal *carinæ* of the middle region disappear after the ninth scaly ring.

The scales of the sides of the body and of the upper and lateral parts of the neck are flat: some are oval, others circular. Tuberculated and carinated scales may be sometimes seen among them. The limbs are covered by rhomboidal and simple *scutella*. The posterior border of the hind limbs is furnished with a dozen, forming a festooned crest.

The lower part of the body is protected by quadrangular *scutella*, having often each a pore towards the middle of its posterior border.

Colour.—All the upper part of the body is of an olive-green, sprinkled with black on the head and neck, and marked with the same colour on the back and tail. Two or three large oblique black bands show themselves on each flank. The lower parts of the animal are of a greenish-yellow. The nails are of a brown tint.

Dimensions.—MM. Duméril and Bibron state that they have seen eighteen individuals of this variety, from fifty centimetres to three metres in length. Those of the individuals whose locality is well proved came from Egypt or Senegal. There were eight from the latter country and among them were the smallest and the largest of the series. Among the Egyptian specimens was that dissected at Cairo by M. Geoffroy, who brought it to the French Museum, and two mummies, one a metre long, which MM. Duméril and Bibron are of opinion was erroneously considered by M. Geoffroy as belonging to his *Crocodilus marginatus* (variety C. of MM. Duméril and Bibron); the other, two metres and fifty centimetres in length, on which M. Geoffroy founded his species *Croc. complanatus.*

Variety B. *Crocodilus palustris.* Less. Voy. Ind. orient. Bell, Zool. Rept. p. 305. *Crocodilus vulgaris,* Var. E. Gray, Synops. Rept., p. 58.

Variety C. *Crocodilus marginatus.* Geoff. Croc. d'Egypte p. 165. *Crocodilus vulgaris,* Var. B. Gray, Synops. Rept., part i., p. 58.

Variety D. Body elongated, slender. Jaws very much narrowed; the upper jaw slightly arched transversely. Chanfrein elevated; surface of the upper mandible somewhat embossed as it were. Cranial region perfectly flat. Carinæ of the two mesio-longitudinal series a little lower than the others, and also more approximated. Upper parts sprinkled with black angular stains. Syn. *Crocodilus complanatus, Crocodilus Suchus,* Geoff.

It may be expected that we should notice the antient history of an animal held sacred by the Egyptians and even elevated by them to the rank of a deity, for it was certainly one of the symbols of Typhon. Herodotus, Aristotle, Diodorus, Strabo, and Plutarch, will be read with interest on this subject. While it was worshipped in one part of Egypt under the name of *Suchus* or *Souchis*, it was eaten at Elephantine. Cuvier observes that the term Σοῦχος or Σοῦχις was only applied to the sacred individual, as Apis, Mnevis, and Pacis were appellations of the deified bulls of Memphis, Heliopolis, and Hermonthis respectively, and not intended to designate particular races of oxen. Geoffroy St. Hilaire is of a different opinion from Cuvier, who considered that Champsa *, as used by Herodotus, was not applied by that historian to the locality of Elephantine alone, nor to any particular species. Geoffroy observes that the crocodile still bears in Egypt the name of *Temsa*, which M. Champollion thought he recognized upon many papyri as *mshah*, a word which he regards as formed of the preposition '*m*,' 'in,' and the substantive '*sah*' 'egg.' With regard to the *Suchus*, M. Champollion, the younger, states that the Egyptians gave the name of *Souk* to a deity which they represented as a man with a crocodile's head. We refer those who wish to follow out this part of the subject more especially to the antient authors above mentioned, to M. Geoffroy St. Hilaire, to Cuvier, and to the interesting work lately published on Egyptian antiquities† as part of the 'Library of Entertaining Knowledge,' observing only that the Egyptians ornamented their tame crocodiles by hanging rings of gold and precious stones in the opercula of their ears, which they pierced for the purpose, adorned their forefeet with bracelets, and presented them in this finery to the veneration of the people. They also fed them well. Cake, roast-meat, and mulled wine were occasionally crammed and poured down their throats. Pliny, Ælian, and others did little but copy what preceding writers had written upon this subject, but we learn from the former that the Romans first saw them in the Ædileship of Scaurus, who showed five. Augustus introduced thirty-six of them into an amphitheatre at one time, where they were all killed by Gladiators.

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* Καλέονται δὲ οὐ κροκόδειλοι ἀλλὰ χάμψαι—But they are not called Crocodiles, but Champsæ.

† The British Museum, 'Egyptian Antiquities, vol. ii., London, C. Knight, 1836, 12mo.

It is said that *Crocodilus vulgaris* is no longer seen in the Delta, but that it is found, sometimes in great numbers, in the Thebaid and the Upper Nile.

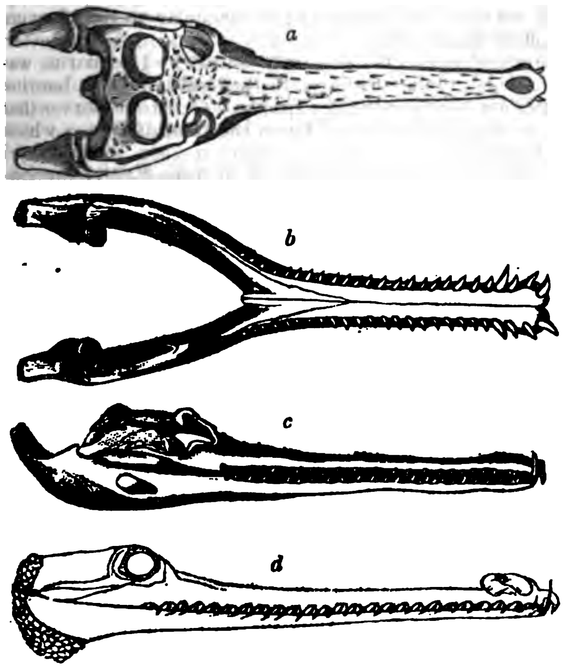
Gavialis.

Jaws very narrow, very much elongated, forming a sort of subcylindrical beak. Four notches in the upper mandible, in which are received the first and the fourth of the lower teeth.

The upper mandible of the *Gavials* is never pierced for the intromission of the teeth of the lower jaw, as it is in *Crocodilus*; but there are four large notches which serve as lodgments for the first and fourth pair of lower teeth. The *Gavials* are besides distinguished by the narrowness and length presented by the anterior part of their head and jaws, which resemble a sort of straight beak spread out at its origin, subcylindrical for the greatest part of its length, and terminating in a slight circular enlargement at its extremity. These jaws are rectilinear, and not undulated as in *Alligator* and *Crocodilus*. The number of teeth with which these narrow mandibles are armed is also greater than in either of the last-mentioned genera, amounting ordinarily in *Gavialis* to 118 or 120, all of which are equal, with the exception of those which compose the five or six first pairs above as well as below. The post-orbito-cranial holes are oval, and larger than they are in *Crocodilus*, for their diameter approaches that of the orbits themselves. The external orifice of the *nasal fossæ* or rather of the long canal, which M. Geoffroy St. Hilaire has termed *Cranio-respiratory*, is triangular. The membrane which closes this orifice has a considerable development in the males, and forms a large, oval, cartilaginous mass. This prominence is a kind of sac divided into two portions internally, the aperture of which is backwards and a little below. As in the crocodiles, the eyelid contains in its substance a rudiment of a bony plate.

The hind feet of the *Gavials* are formed for the most part in the same manner as those of the majority of species of *Crocodilus*; that is to say, there are long and wide webs between the toes, and the posterior part of the leg is furnished with a dentilated crest. The cervical plates of the *Gavials* form a long band on the neck, as in the *Caimans*, and in one species only of *Crocodile*. The scales of the flanks are flat and oval. The *carinæ* which surmount the bony pieces forming the dorsal cuirass are low, but the crest of the tail is very much elevated throughout the whole of its length.

The *Caimans* and *Crocodiles*, in their youth, have the head short in proportion to the size which it exhibits at their full growth. The contrary obtains among the Gavials, for in them the head is proportionally longer in youth than it is in age, so that it has the appearance of becoming shorter as the animal increases in size. (Duméril and Bibron.)



a, skull of the Great Gavial, Gavialis Gangeticus, seen from above; *b*, lower jaw of Gavial, another individual; *c*, profile of the skull of Gavial; *d*, outline of the head covered with the integuments.

The Gavials were distinguished generically by Cuvier under the name of *Longirostris*, and by Wagler under that of *Rhamphostoma*. The term generally adopted by zoologists is *Gavialis*. Example. *Gavialis Gangeticus*.

Syn. *The narrow-beaked crocodile of the Ganges*, Edw., Phil. Trans. *Crocodilus maxillis teretibus subcylindraceis*, Gronov. Zooph. *Crocodilus*, Merck, Hess. Beytr. *Lacerta Gangetica*, Gmel. *Le Gavial*, Lacép., Hist. Quad. Ovip. *Le Gavial*, Bonn., Encyc. Méth. *Crocodile du Gange* ou *Gavial*, Fauj. Saint Fond, Hist. Mont. Saint-Pierre. *Crocodilus longirostris*, Schneid., Hist. Amph. *Le Gavial*, Latr., Hist. Rept. *Gangetic crocodile*, Shaw, Gener. Zool. *Crocodilus arctirostris*, *Crocodilus longirostris*, Daud., Hist. Rept. *Crocodilus longirostris*, *Crocodilus tenuirostris*, Cuv., Ann. Mus. Hist. Nat. *Crocodilus Gangeticus*, *Crocodilus tenuirostris*, Tied., Opp. und Libosch, Naturg. Amph. *Gavialis longirostris*, *Gavialis tenuirostris*, Merr. Amph. *Crocodilus longirostris*, *Crocodilus tenuirostris*, Cuv., Oss. Foss. *Le Grand Gavial*, *Le Petit Gavial*, Bory de Saint Vincent, Dict. Class. d'Hist. Nat. *Crocodilus Gangeticus*, *Crocodilus tenuirostris*, Geoff., Mém. Mus. d'Hist. Nat. *Le Gavial du Gange*, Cuv., Reg. Anim. *Gavialis tenuirostris*, Guer., Icon. Reg. Anim. *Rhamphostoma tenuirostre*, Wagl., Naturl. Syst. Amph. *Gavialis Gangeticus*, Gray, Synops. Rept. *The Gavial of the Ganges*, Griff., Anim. Kingd.

Description.—The head of the *Gavial* may be considered as framed of two parts; one anterior and long, almost cylindrical in form, more or less flattened; the other posterior and short, presenting the figure of a depressed hexahedron, wider behind than before. The jaws constitute the anterior part or beak, which is long, straight, and of extreme narrowness, but not, properly speaking, cylindrical. It is four-sided, but the angles are rounded. It spreads out at its base and terminates in front, so as to recall to the observer the beak of *the Spoonbill*. Its vertical diameter is throughout less than its transversal diameter.

The head, properly so called, that is, the part situated behind the beak, has its sides straight and perpendicular. The upper surface is quadrilateral. The post-orbital portion is flat and smooth, except that one can perceive through the skin the subtriangular or ovöid holes with which the skull is dotted. The other portion is considerably inclined forwards, and mostly occupied by the eyes, the interval between which forms a slight gutter-like depression. The mandible is not continued from the forehead by a gradual slope as it is in the *Crocodiles*, but sinks suddenly to follow a straight and nearly horizontal direction, on a line with the inferior edge of the orbit. At the extremity of this upper mandible are the four notches for the passage of the first and fourth lower teeth when the mouth is shut. Two of these notches are very deep, and situated quite in front; the other two are moderate, and placed one on the right, the other on the left, behind the spatuliform termination of the beak, where it is slightly constricted.

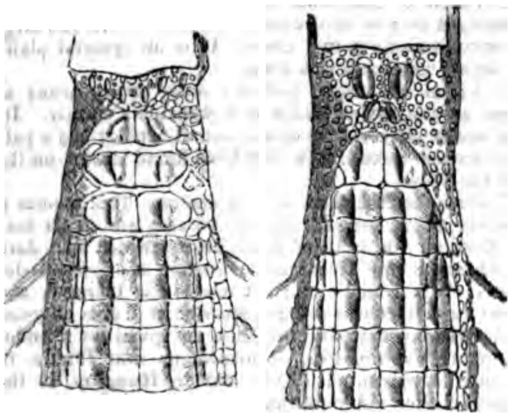
The division of the lower jaw into two branches does not commence till towards the twenty-second or twenty-third tooth. The ten first upper teeth, among which the two anterior teeth are the least separated, are implanted in the intermaxillary bone, and the greater portion of the teeth of the upper mandible are longer than the corresponding teeth of the lower jaw. Up to the nineteenth or twentieth pair they are turned a little outwards, so that when the mouth is shut the upper teeth pass over the sides of the lower jaw, and the lower teeth over the sides of the upper. The six last pairs are straight or nearly so, so that the points of the one set correspond exactly with the intervals of the other. The first, the third, and the fourth above, and the first, second, and fourth below, are the longest. They are, in general, a little curved and slightly compressed from before backwards, and are very slightly trenchant right and left. Hardly more than the eight or nine last on each side are nearly conical. Slight vertical ridges show themselves on the surface of the teeth of old individuals.

Under the throat, about the middle of the branches of the maxillary bone, are situated, one on the right and the other on the left side, the musky glands.

The external orifice of the nostrils opens on the upper side of the beak, at a small distance from its terminal border. The aperture is semilunar, at the bottom of which may be perceived a cartilaginous plate, which divides it longitudinally in two. The edges of this opening form two lips, which appear to have the power of approaching each other, so as to close the aperture hermetically. The anterior of these is curvilinear, and the posterior rectilinear: in the females and in young subjects they are very delicate and quite soft; but in the old males the anterior lip not only arrives at a cartilaginous consistence, but a development that carries it backwards as far as the seventh pair of teeth, and triples the thickness of the muzzle. This pouch or cartilaginous sac, with two compartments, is of a sub-oval form, and is notched behind so as to form two very thick rounded lobes. Above these is, on the mesial line and in front, a cordiform prominence, on each side of which is a deep fold in the form of the letter S. This sac has its opening, which is common to it and the nostrils, below. This apparatus is the nasal purse or pouch (*Bourse nasale*) of M. Geoffroy, and in his opinion performs the office of a reservoir of air for the animal when plunged beneath the surface of the water.

The anterior limb is nearly one-half longer than that part of the body which lies between the anterior and posterior limbs of the same side. The hinder limb is about two-thirds of the same interval. The third toe is longest in all the feet. The three middle toes of the fore foot are united at their base by a very short membrane: the other two toes are free, as well as the first toe of the posterior feet; but the second, third, and fourth of these last, are united by a thick membrane with a free border, which is notched as it were semicircularly between the toes. The nails are slightly arched.

The nape supports two strong scutcheons, surmounted by a *carina*, more compressed behind than it is before. Their form is oval, and their height nearly equal to their width. There is sometimes a small scutcheon on each side of these. This is the case in one of the largest individuals; viz., that described by Lacépède, and figured by Faujas de Saint-Fond in his 'History of St. Peter's Mountain,' at Maestricht. The cervical scutcheons, to the number of four pairs, form a longitudinal band, which extends from two-thirds of the length of the neck to the dorsal shield. The two first are triangular, the six others quadrilateral. Each of them have a longitudinal carina on their mesial line, and there is a large scale on the left and on the right of the last pair.



[Nuchal and cervical plates, &c., of two individuals of Gavialis Gangeticus from Cuvier.]

The upper part of the body is transversely cut by eighteen bands of osseous plates, with equal *carinæ*, which consequently form four longitudinal rows all down the back. The plates of the two lateral rows are squared and rather smaller than those of the mesial rows, which are also four-sided, but their longitudinal diameter is less than their transversal. A longitudinal row of other carinated scutcheons borders this dorsal cuirass on the right and on the left, for a part of its length. The flanks, the sides of the neck, and a portion of its upper part, are covered with oval, flat scales of moderate size. The tail is surrounded by from thirty-four to forty scaly circles, the number varying in different individuals. The dentilated crest does not become very perceptible till towards the sixth or seventh circle: its double portion terminates at the eighteenth or nineteenth. This crest is highest towards the middle of the tail, elsewhere it is delicate and flexible. The scales which clothe the lower parts of the body are quadrilateral, oblong, and perfectly smooth: there are nearly sixty transverse rows from the chin to the vent, and, like those of the flanks, they are all pierced with a small pore on the middle of their posterior border.

The limbs are protected above with rhomboidal scales: the anterior limbs on their external edge; the posterior limbs, from the hock (*jarret*) to the little toe, have a row forming a serrated edge. The surface of the natatory membranes is covered with granulous scales.

Colour. The ground colour of the upper parts is a deep water green, on which are often scattered numerous oblong, irregular, brown spots. In young subjects, the back and limbs are transversely banded with black. The lower region of the body is very pale yellow, or whitish. The jaws are sprinkled with brown. The nails are of a clear horn-colour. (Duméril and Bibron.)

The Gavial of the Ganges is supposed to be the largest of the living Saurians. The measurement of the largest mentioned by MM. Duméril and Bibron is given at five metres, forty centimetres.

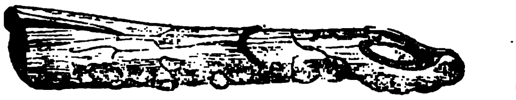
Cuvier was led to think, principally from the figures published by Faujas de Saint Fond, that there was more than one species of Gavial, and on subsequent inquiry, distinguished two, *the Great Gavial* and *the Little Gavial*; but he was afterwards satisfied from the examination of numerous specimens that age alone made the difference between them.

FOSSIL CROCODILIDÆ.

'In the living subgenera of the Crocodilean family,' observes Dr. Buckland (Bridgewater Treatise, p. 250), 'we see the elongated and slender beak of the Gavial of the Ganges, constructed to feed on fishes; whilst the shorter and stronger snout of the broad-nosed Crocodiles and Alligators, gives them the power of seizing and devouring quadrupeds that come to the banks of rivers in hot countries to drink. As there were scarcely any mammalia during the secondary periods, whilst the waters were abundantly stored with fishes, we might, *à priori*, expect that if any Crocodilean forms had then existed, they would most nearly have resembled the modern Gavial. And we have hitherto found only those genera which have elongated beaks, in formations anterior to and including the chalk; whilst true Crocodiles, with a short and broad snout like that of the Cayman and the Alligator, appear for the first time in strata of the tertiary periods, in which the remains of mammalia abound.'

In accordance with this view, we proceed to give examples of the long-beaked division, which, while it bears a strong resemblance to the living *Gavial* in the form of the head and jaws, will be found to differ materially from it in some particulars.

The genus *Steneosaurus* of Geoffroy St. Hilaire appears to come the nearest in its conformation to the living *Gavial*, and a general idea of the structure of the muzzle and anterior nasal aperture will be derived from the following cut of a specimen from Havre*;



[Muzzle of Steneosaurus from Dr. Buckland, who quotes De la Beche.]

whilst, in *Teleosaurus*, Geoff., though there is considerable similarity in the general contour of the head and jaws, the conformation of the muzzle and nasal aperture is very different from that of the living saurian, the anterior termination of that aperture forming almost a vertical section of the extremity of the upper mandible.

As an example of the more Crocodilean form, we select the cranium and the upper mandible of a specimen from the London clay of the Isle of Sheppey, figured also by Dr. Buckland in his Bridgewater treatise.

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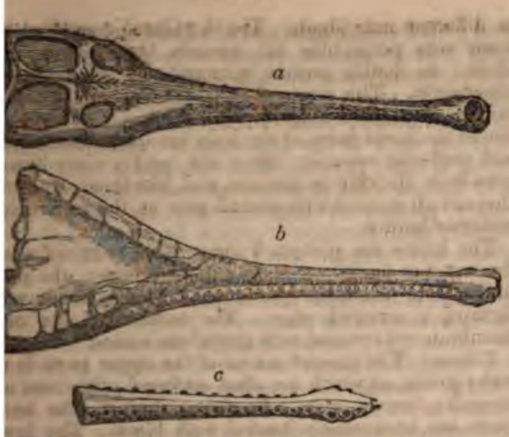
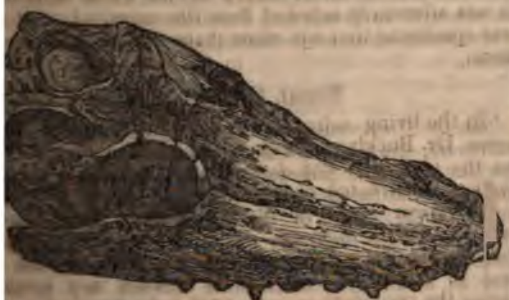
* Dr. Buckland states that the same species occurs in the Kimmeridge clay of Shotover Hill near Oxford.



[...saurus Chapmanni. *a*, head seen from above; *b*, head of another
al of the same species seen from below, showing the lower jaw; lo-
both, Lias in the neighbourhood of Whitby; *c*, inside view of ante-
mity of lower jaw. Locality, Great Oolite at Enslow near Woodstock,
From Dr. Buckland.]

lor extremities of the beak or jaws of Teleosaurus. Locality, Great
onesfield, Oxon. From Dr. Buckland.]



[Skull of Crocodilus Spenceri.]

gh differing from both, it will be seen by a reference
cuts, that this last form of head comes nearer to that
gator than to that of *Crocodilus*.

Duméril and Bibron, in their elaborate work on
s, from which we have drawn largely, arrange the
Ichthyosaurus and *Plesiosaurus* among others, un-
ir *Sauriens Aspidiotes Fossiles*, an arrangement to
we cannot subscribe on account of the great differ-
etween the organization of these extinct Saurian
nd the *Crocodilidæ*. Indeed the very heading Sauriens
tes fossiles, would seem to be a warning to exclude
sauri and *Plesiosauri* from such an association.

annot close this part of the subject better than in
owing words of Dr. Buckland.

discovery of Crocodilean forms so nearly allied to
ng Gavial in the same early strata that contain the
ers of the Ichthyosaurus and the Plesiosaurus, is a
ich seems wholly at variance with every theory that
lerive the race of Crocodiles from Ichthyosauri and
uri by any process of gradual transmutation or de-
ent. The first appearance of all these three families
les seems to have been nearly simultaneous; and
continued to exist together until the termination
secondary formations, when the Ichthyosauri and
uri became extinct, and forms of Crocodiles ap-
ng to the Cayman and the Alligator were for the
e introduced.' (*Bridgewater Treatise*, vol. i. p. 254.)

CODILU'RUS. [LACERTIADÆ.]

CUS, a beautiful genus of Iridaceous plants, con-
of many hardy species, some of which are among
mmonest ornaments of gardens. Crocuses are
found in the middle and southern parts of Europe
Levant, three only being wild with us, namely Crocus
rus, which is abundant in the meadows near Not-
n, C. vernus, and C. sativus. Botanists have found
mely difficult to ascertain by what precise technical
the species are to be distinguished. We do not pro-
occupy ourselves with that subject, but shall rather enumerate briefly the names and localities of such as are apparently distinct; so that those who wish to form a complete collection of these pretty flowers may know where to look for them, and when their task is accomplished.

* VERNAL SPECIES.

1. *C. vernus.* This is the common purple or white crocus of our gardens in the spring. It has produced a multitude of florists' varieties, some of which are extremely beautiful and well marked. Its root-coats are finely netted, its flowers scentless, and the throat of the tube of the flower hairless. *C. albiflorus* and *C. obovatus* are varieties of it. It is said to be wild in some parts of England, but it may have been introduced. It is certainly wild on the Alps, particularly of the Tyrol, Piedmont, Switzerland, Salzburg, and Carinthia, descending to the sea-coast at Friuli. It is also found on the mountains of the Abruzzi and elsewhere in similar situations in the kingdom of Naples, associating itself with oaks, chestnuts, and similar trees, and not existing at elevations exceeding 6000 feet.

2. *C. versicolor*, the common sweet-scented, variegated, spring crocus. There are not many varieties of it, all of which are recognized by the root-coats not being cut circularly, the yellow tube of the flower bearded with hairs, and the sweet scent. It grows wild about Nizza (Nice), and in all the eastern parts of Provence.

3. *C. biflorus*, the Scotch crocus. The beautiful pencilled sepals and clear or bluish white petals of this species distinguish it at once; added to which the root-coats are cut round into circular segments, a circumstance that occurs in no other species. It is a native of the most southern parts of Italy; growing wild in sterile subalpine pastures in the kingdom of Naples, and in similar situations in Sicily. Our garden plants are merely a cultivated state of the *C. pusillus* of the Italians.

4. *C. Imperati.* This is little known in England. Its leaves appear long before the flowers, and are glaucous and spreading. The petals and sepals are a delicate violet inside, but externally white; the petals are almost whole-coloured and pale purple, except at the base; the sepals are strongly feathered with rich purple. A white and a whole-coloured variety of it are said to exist. It differs from *C. biflorus* in its root-coats being membranous, and not cut circularly, and from *C. versicolor* in the tube of the flower not being hairy. It inhabits low hills and woods in the kingdom of Naples, on Capri, on Mount S. Angelo di Castellamare, and elsewhere. It is supposed that *C. suaveolens* is at most only a variety of this.

5. *C. luteus* or *mæsiacus*, the large yellow crocus. It is characterized by very large whole-coloured flowers, and large roots, with coarsely netted coats. It is an oriental plant, but its exact locality is unknown.

6. *C. aureus*, the small yellow crocus, by no means so common as the last, of which it is probably a variety. Its flowers are smaller and deeper coloured, and it has a pale cream-coloured variety. Dr. Sibthorp found it wild on the hills of the Morea.

7. *C. susianus*, the cloth of gold crocus. This species is well known for its coarsely-netted root skin and small deep yellow flowers, the sepals of which are feathered with dark chocolate-brown, and are rolled back when expanded under sunshine. It is a native of the Crimea, the Ukraine, and the other parts of south-western Russia: it is also believed to be a Turkish plant; and localities are given for it under the name of *C. reticulatus*, on mountains near Trieste, in woods near Lippizza, in Friuli, and in Hungary, in the lordship of Tolna. A remarkable variety with deep purple flowers exists, but it is extremely rare.

8. *C. stellatus* and *sulphureus* are pale and probably hybrid varieties of *C. luteus*. They have never been seen except in gardens, and are the least pretty of the genus.

* * AUTUMNAL SPECIES.

9. *C. sativus*, the common saffron crocus, an eastern plant, cultivated from time immemorial for the sake of its long reddish orange drooping stigmas, which, when dried, form the saffron of the shops. Its Asiatic localities are not known; in Europe it grows apparently wild in the south of Tyrol, and is said to have been found near Ascoli, and on the Alps of Savoy. Its British station is in all probability to be ascribed to accident.

10. *C. odorus*, the Sicilian saffron. This species, which has also been named *C. longiflorus*, is found in mountain

pastures in Calabria, and in both mountainous and maritime situations through all Sicily, where its stigmas are collected instead of those of the true saffron. Its blossoms are sweet-scented, and are known at first sight from the stigmas not hanging out of the flower, but standing upright and inclosed within it. The tube of its flower is very long.

11. *C. Thomasii*, a Calabrian plant, found in mountain woods. It is said to have coarsely-netted root-coats, fragrant saffron-like truncated stigmas inclosed within the flower, which appears long after the leaves, and has a bearded throat. Exists in English gardens, but is very rare.

12. *C. nudiflorus*. The flowers appear without the leaves, and the root-coats are slightly netted. The stigmas are divided into many deep narrow segments. The plant is not rare in many parts of Europe, flowering about the time of the Colchicum, to a small species of which it at first sight bears much resemblance. *C. speciosus*, *multifidus*, *medius*, are mere varieties or synonymous names of this plant.

13. *C. ecrotinus*. This requires to be compared with *C. odorus*, to which it approaches very nearly, if it be not the same thing.

For a florist's account of the varieties of spring crocuses cultivated in the gardens of this country, see the *Transactions of the Horticultural Society of London*, vol. vii.

CRŒSUS (Κροῖσος), the last of the Mermnadæ, son of Alyattes, succeeded his father Alyattes as king of Lydia at the age of thirty-five, B.C. 560. (Herod. i. 7 and 26.) But before this time he seems to have been associated with his father in the government. (Clinton, *Fast. Hel.*, p. 297; and Larcher *on Herod.*, i. 27.) He was contemporary with Pisistratus, tyrant of Athens (Herod. i. 59), and with Anaxandrides, king of Sparta (i. 67). He attacked and reduced to subjection all the Ionians and Æolians in Asia (i. 26), and all the nations west of the Halys (i. 28). The increase of the Persian power led him, after consulting various oracles in Europe, Asia, and Africa, to form an alliance with Amasis, king of Egypt (i. 77), and with the Lacedæmonians (i. 69), as the most powerful people of Hellas, about 554 B.C. (Clinton, *F. H.*, p. 207). He subsequently attacked and conquered the Cappadocian Syrians beyond the Halys, and engaged in battle with Cyrus, in which however neither was victorious. He returned to Sardis, intending to wait till the following year to renew the war; but Cyrus, anticipating his designs, attacked him in his own capital, defeated him, and took Sardis B.C. 546. Crœsus was made prisoner and was placed on a pile to be burnt, but Cyrus relented, and the fire was extinguished. He reigned fourteen years. After his captivity he became Cyrus's favourite companion and adviser in his future wars. When Cyrus died he recommended Crœsus to his son and successor Cambyses, as one in whom he might confide as a friend. Crœsus however did not long continue in the favour of Cambyses: he took upon himself on one occasion to admonish the king, believing him to be insane, and he had great difficulty in escaping with his life. Little is known of him after this period. While king he was visited by Solon, and Herodotus (i. 30—33) records a long conversation between them on wealth and happiness. The riches of Crœsus were so great that his name has almost passed into a proverb. It is said that he had a son who was born deaf and dumb, but who gained the faculty of speech by the effort which he made to cry out when he saw a Persian going to kill his father at the capture of Sardis. (Herodotus; Plutarch, *Life of Solon.*)

CROFT, WILLIAM (Mus. Doc.), who as a composer of cathedral music has no superior, was born in Warwickshire in 1677, and educated in the Chapel-Royal under Dr. Blow. His earliest preferment was to the place of organist of St. Anne's, Soho, when an organ was for the first time erected in that church. In 1700 he was admitted a gentleman-extraordinary of the Chapel-Royal; and in 1704 was appointed joint-organist of the same with Jeremiah Clark, on whose decease, in 1707, he obtained the whole place. In 1708 he succeeded Dr. Blow as Master of the Children and Composer to the Chapel-Royal, and also as organist of Westminster Abbey. In 1711 he published, but without his name, a volume containing the words of the anthems used by the three London choirs, with a preface, giving a brief history of English church-music; in which, on the authority of Dean Aldrich, he ascribes the anthem, 'O Lord, the Maker of all things!' to Henry VIII., and mentions Tallis as famed throughout Europe for his compositions. In 1715 Croft was created Doctor in Music by the University of Oxford; his Exercise consisted of a Latin and an English Ode, both of which were afterwards curiously engraved in score, and published under the title of *Musicus Apparatus Academicus*. In 1724 he published his noble work, *Musica Sacra*, in two volumes, folio. In the preface to this he states that his work is the first essay in music-printing of the kind, it being in score, engraved, and stamped on plates, and that for want of some such contrivance, the music formerly printed in England was very incorrectly published; as an instance of which he mentions Purcell's *Te Deum* and *Jubilate*. Dr. Croft died in 1727, of an illness produced by his attendance at the coronation of George II., and was interred in Westminster Abbey, where a monument, erected to his memory by his friend Humphrey Wyrley Birch, Esq., records his high merits as a composer, and his amiable and excellent moral qualities as a member of society. Besides his ecclesiastical music, Dr. Croft was the author of six sonatas for two flutes, six for a flute and a base, and numerous songs, which appeared in the various musical publications of his day. (Hawkins' and Burney's *Histories.*)

CROMARTY. [ROSS AND CROMARTY.]

CROMER. [NORFOLK.]

CROMLECH, a large stone placed in the manner of a table, but in an inclined position, upon other stones set up on end. Monuments of this description are numerous in Anglesea, where two of the largest Cromlechs in Britain remain at Plas Newydd. Many others are seen in Wales. They are likewise found in Scotland, Ireland, Jersey, Britany, and, in fact, wherever the religion of the Druids prevailed. Cromlechs are also described to have been found both in North and South America. Borlase, in his 'Natural History of Cornwall,' suggests that they were sepulchral. But Rowlands, in his 'Mona Antiqua,' King, Toland, and numerous other of our best antiquaries, consider them the remains of altars used for idolatrous sacrifices. They were usually placed in the centre of a circle of stones, the Druid temple; and had a single stone, of large size, occasionally near them, supposed to have served as a pedestal for some deity.

CROMWELL, THOMAS, was born at Putney, near London, where his father was a blacksmith, and afterwards a brewer. He was taught reading, writing, and a little Latin; and as soon as he grew up went to the continent, where he learned several foreign languages. He became clerk in an extensive factory at Antwerp; from whence he was taken to Rome (1510) by some citizens of Boston in Lincolnshire, who thought that he would be of assistance to them in some business that they had with the pope. During this journey he learned by heart Erasmus's translation of the New Testament, and he continued to improve himself during his residence in Italy. On his return he was received into Cardinal Wolsey's house, became his solicitor, and the chief agent in the foundation of his colleges at Oxford and Ipswich. He was also returned as a member to the House of Commons, where he increased his fame by his defence of Wolsey, who had there been indicted for treason. After the cardinal's disgrace, Cromwell was taken into the service of the king: in 1531 he was knighted, and made privy councillor and master of the jewel-house. He now rapidly rose to the most important offices in the state. In 1532 he became Clerk of the Hanaper in the Court of Chancery, and afterwards Chancellor of the Exchequer: in 1534 he was Principal Secretary of State, Master of the Rolls, and Chancellor of the University of Cambridge; in 1535, Visitor-General of English monasteries, and in 1536 Keeper of the Privy Seal. He now resigned the Mastership of the Rolls, and was created Baron Cromwell of Okeham in Rutlandshire, and appointed Vicar-General and Vicegerent, in all religious matters the next in authority to the king, who was now the supreme head of the English church. His friendship with Cranmer was intimate, and their views respecting the reformation very similar. It being Cromwell's object to destroy the pope's authority, he circulated new articles of faith, and enjoined the clergy to preach the king's supremacy, to remove images from their altars, and to promote the religious education of all young persons, teaching them the Creed, the Lord's Prayer, and the Ten Commandments. He commanded English Bibles to be placed in the churches, and took active means for the dissolution of the monasteries. These alterations, together with the great increase of his wealth, some of which it was suspected that he obtained by dishonest means, rendered him extremely unpopular, so that there were not wanting many enemies who endeavoured to prejudice the king against him. The king's esteem for him could not however be shaken in 1537 he was appointed Chief Justice of all Forests beyond Trent, and in August in the same year was elected Knight of the Garter, and nominated Dean of Wells. The long list of Cromwell's titles and official appointments is still far from completed. In 1538 he was made Constable of Carisbrook Castle, and obtained a grant of the castle and lordship of Okeham. About this time he issued various injunctions [CRANMER] to the clergy, by one of which parish-registers were established; and in 1539, after having received from the king several monastic manors and valuable estates, was created Earl of Essex, and named Lord Chamberlain of England: at the same time Gregory, his son, obtained the barony of Okeham.

Hitherto there had been little check to the career of Cromwell's prosperity: his favour at court had always been sufficient to stifle any popular complaints, but he now became aware that both Cranmer and himself were declining in the royal estimation. Gardiner (bishop of Winchester) and his party had gained some ascendancy over the king, and in proportion as the power of these advocates of the Roman Catholic faith increased, the influence of the reformers declined, and both they and their doctrines became unacceptable at court. In order to regain his former ground, or at least to intrench himself firmly in the powerful position which he still retained, Cromwell lost no opportunity of promoting Henry's marriage with Anne of Cleves, taking care to set before the king, as often as circumstances permitted, the many advantages which would arise from such a union. The cause of Cromwell's great zeal was this: Anne and all her friends were Lutherans, and Cromwell counted upon great support from a queen of his own choice, whose religious opinions were in direct opposition to the Roman Catholics. The complete failure of this scheme became the ruin of its contriver. An aversion to the promoter of the marriage quickly followed the king's disgust and disappointment at his ugly bride, and Henry now willingly opened his ears to the flood of complaints which were poured into them from every quarter. To the laity Cromwell was hateful, on account of the oppressive subsidies that he had raised notwithstanding the large sums which had accrued from the dissolution of the monasteries; to the nobility he was still more odious, on account of the titles and power that he had obtained notwithstanding the meanness of his birth; and to the Roman Catholics he was an object of aversion and jealousy, on account of the Protestant doctrines that he held and promulgated. As soon then as it was apparent that the capricious king, who had elevated him from an humble individual to be the most powerful subject in the realm, was no longer willing to support him, his downfall was certain. The numerous important acts of his administration supplied his enemies with abundant proofs of malversation and treason. He was arrested on the 10th of June, 1540, and committed to prison. The letters that he wrote to the king praying for pardon were disregarded, though the king was touched by them, and read them thrice over: he was accused on the 17th of June in the House of Lords, which sent the bill of attainder down to the House of Commons on the 19th. Here some objections were raised against the bill; but after a delay of ten days a new bill was framed by the Commons, which the Lords afterwards passed. This bill contained twelve articles of impeachment (Burnet, *Hist. Ref.* vol. i.), accusing him, among other crimes, of being 'the most false and corrupt traitor and deceiver that had been known in that reign,' 'of being a detestable heretic,' and 'of having acquired innumerable sums of money and treasure by oppression, bribery, and extortion.' To these accusations he was not allowed to answer in court, for fear, as it may be supposed, that he would prove the king's orders, directions, or consent for doing many things of which he was accused. He was kept in close custody for six weeks, when any hope that he might have entertained of a reprieve was put an end to; the charms of Catherine Howard and the endeavours of the duke of Norfolk and the bishop of Winchester prevailed, and the king signed a warrant for his execution, which took place on Tower Hill on the 28th of July, 1540. Thus fell this great minister, of whom, as indeed of most of his contemporaries, very opposite characters have been handed down to us by historians. His virtues are greatly magnified by the advocates of the Reformation, his vices by its opponents. It appears doubtful, from a speech that he made at his death, in which religion he died; but it is very probable that he was a Lutheran, and that he used the term *Catholic* Faith (which some have held was intentionally ambiguous in his speech and afterwards in Cranmer's) in the Lutheran meaning of the term. Cromwell was no patriot: his own interest, elevation, and aggrandizement seem always to have been uppermost in his thoughts. He was ambitious, unscrupulous, rapacious, hypocritical, and suspicious. To counterbalance these evil qualities he had few virtues. He is said to have shown cruelty in the condemnation and execution of some heretics, but he could scarce have been without benevolence, for about 200 persons (Stowe's *Survey*) were fed twice a day at his gate. He had a good understanding, and a very retentive memory, and his attention to business was frequent and assiduous. He was the promoter of many useful alterations in the laws, and especially in those respecting the church. These were his chief merits. In passing judgment upon him, the remembrance of the reckless tyrannical caprice of his master, of the rapidity of his own advancement, together with the licentiousness of the times, should enhance the value of his merits, and temper our condemnation of his crimes.

(Fox's *Acts and Monuments;* Stow's *Annals*, Strype's *Memorials;* Lord Herbert's and other *Histories of England;* Burnet's *Reform.;* Collier's *Ecclesias. Hist.;* the *Biog. Brit.*, &c. &c.)

CROMWELL, OLIVER, the son of Robert Cromwell, and his wife Elizabeth, daughter of Sir Richard Stuart, was born in St. John's parish in the town of Huntingdon, on the 25th of April, 1599, and named after his uncle and godfather, Sir Oliver Cromwell, a worthy member of his antient and respectable family. He grew up a stubborn mischievous boy, so little inclined to sedentary occupation, that when in 1616 he exchanged a school at Huntingdon for Sidney College, in the neighbouring university of Cambridge, he had made no great progress in his studies. At the death of his father, which occurred soon after he went to college, he was removed from the university by his mother, who in the changed state of her circumstances, thought it more prudent to enter her son at Lincoln's Inn, that he might follow the profession of the law. To such a grave study however Oliver did not feel inclined. With little intention to use them for their proper purpose, he took possession of his chambers: the vices of the town were new to him, and being no longer restrained by the vigilance of his father, he fell into profligate habits, and became addicted to gambling. Two or three years afterwards, when he returned to Huntingdon, he still continued to live so dissolute a life that he forfeited the friendship of his uncle Sir Oliver Cromwell. His mind however soon became uneasy; the diminution of his fortune and compunction for his conduct weighed upon his spirits, and on a sudden there appeared a great alteration in his life. His companions and their extravagances no longer pleased him; gay were superseded by grave thoughts, and his attention frequently rested on religious subjects. This change restored to him the countenance of his friends; and his relations, the Barringtons and the Hampdens, interested themselves in arranging an union between Oliver, who had now completed his twenty-first year, and Elizabeth, the daughter of Sir James Bourchier, a lady wanting in personal attractions, but virtuous, sensible, and possessed of a moderate fortune. Soon after his marriage, his attachment to the Puritans first appeared, and his house at St. Ives became the retreat of the disaffected clergy. As the nation was extremely dissatisfied with the court, and Oliver Cromwell's aversion to it was known, he was elected member for the borough of Huntingdon in 1628: this parliament was of short duration. The king, by its impolitic speedy dissolution, still further irritated his enemies. Cromwell's house was more than ever frequented by Puritan preachers and their hearers. His opinions became so deeply rooted, that his hospitality to those who were of the same way of thinking increased his expenses until his circumstances became again so much embarrassed that a portion of his property was necessarily sold. Whether, after this sale, he was connected with a brewery is not clear: it is certain however that he became a farmer at St. Ives, but having no knowledge of agriculture, this speculation only increased his financial difficulties. Sir Thomas Stuart, his maternal uncle, dying (1636), Oliver became possessed under his will of property in the Isle of Ely amounting to nearly 500*l.* a year. His fortunes were thus partially retrieved: nevertheless in the hope of better providing for his children, he determined in 1637 to emigrate to America, and having taken a passage to New England in a ship then lying in the Thames, embarked with his whole family. The vessel, however, was detained by a proclamation forbidding such embarkations, unless under a license from the government, which he knew that he should be unable to procure. Religion had at this time a very strong influence upon his mind; poor as he still was, we find that, from motives of conscience, he returned sums that in his youth he had won by gambling. He lived at Ely in retirement with his wife and children; but notwithstanding he saw few persons of importance, the activity and vigour of his understanding became generally known: his open advocacy of principles opposed to the government, and the zeal with which he resisted an unpopular attempt to drain some of the neighbouring Cambridgeshire fens, attracted the favourable regard of many public men. In such esteem was he held, that he was proposed for the representation of the town of Cambridge, and elected, though as some say by intrigue (Noble's *Mem.*, vol. i., iii.) in opposition to Counsellor Mewtis, the court candidate, both to the short-lived parliament of 1640, and afterwards to the Long Parliament, by which it was speedily followed.

Cromwell was now in the middle age of life; his health was strong, and his judgment matured: so far circumstances were favourable to his farther elevation. But he had deficiencies, not only in fortune, but in person and in knowledge, which precluded all foresight of the height to which he would rise. He had neither the address nor the appearance of a gentleman. He had resided so little in London, that he was wholly unacquainted with any of the leading men at court; he knew nothing of the ways of parliament or the method of government, and was altogether ignorant of foreign policy. The descriptions given of him on his entrance to the House of Commons, at the beginning of the Long Parliament, display in a striking manner his unpolished rusticity. Sir Philip Warwick gives the following minute account:—'The first time that I ever took notice of him was in the beginning of the parliament held in November, 1640, when I vainly thought myself a courtly young gentleman (for we courtiers valued ourselves much upon our good clothes). I came one morning into the house well clad, and perceived a gentleman speaking (whom I knew not), very ordinarily appareled; for it was a plain cloth suit, which seemed to have been made by an ill country tailor; his linen was plain, and not very clean; and I remember a speck or two of blood upon his little band, which was not much larger than his collar; his hat was without a hat-band; his stature was of a good size; his sword stuck close to his side; his countenance swollen and reddish, his voice sharp and untunable, and his eloquence full of fervour.' With the exception of his eloquence, this probably was a correct picture. Cromwell spoke certainly with fervour; but his biographers must be credited in their assertion that he had not the smallest pretension to rhetoric, but was confused and unintelligible in his address. In a somewhat intemperate sermon written after the Protector's death, Dr. South speaks of his appearance when attending the Long Parliament. 'Who,' says he, 'that beheld such a bankrupt beggarly fellow as Cromwell first entering the parliament-house, with a threadbare torn cloak and a greasy hat (and perhaps neither of them paid for), could have suspected that in the space of so few years he should, by the murder of one king and the banishment of another, ascend the throne, be invested in the royal robes, and want nothing of the state of a king but the changing his hat into a crown.' He had as yet had no opportunity for displaying the extent of his energy and abilities; the time was at hand when they were to be proved.

For an account of the discontents in the kingdom and the causes of the civil war, we must refer our readers to the copious histories of the time. The tyranny and maladministration of the weak and obstinate Charles became the subject (1641) of a violent remonstrance from his parliament, which at once insured their rupture with the king. Cromwell, now associated in the councils of Hampden, Pym, and the rest of the democratic leaders, strenuously supported this remonstrance; and in 1642, when the civil war commenced, eagerly raised a troop of horse, under the authority of the parliament, with which he immediately took the field in their cause. Notwithstanding the comparatively advanced age at which he first buckled on the sword, all writers bear testimony to the military abilities that he displayed throughout the succession of battles between the parliamentary and royalist forces. At Marston Moor, at Stamford, and in the second battle of Newbury, he was especially distinguished. With the title of lieutenant-general of the horse he soon became, under Fairfax, the chief mover of a victorious army; and so valuable were his services considered by the parliament, that he was exempted from obedience to the 'self-denying ordinance'—an injunction which excluded the members of either house from holding any command in the army. This measure was brought forward by Cromwell's friends, who trusted to his popularity in the parliament, and the necessity that it had for his services, to procure an exception in his favour. The result fully answered their expectations; his rivals were set aside, his power more widely spread, and a greater scope given to his ambition. At the battle of Naseby (June, 1645) Cromwell commanded the right wing, and Ireton, his son-in-law, the left; the main body of the royalists was commanded by the king in person. As the troops were nearly equal, the event of the day was looked for by each side with anxious hope. Ireton was repulsed early in the day; but Cromwell and Fairfax, taking advantage of Prince Rupert's temerity, totally dispersed the king's infantry, and took his artillery and ammunition. Elated with victory, the parliamentary army, under the same leaders, vigorously prosecuted their success, until they had reduced most of the royalists in the west. Cromwell now (1646) found leisure to return to London; the thanks of the parliament were voted to him; his services were publicly acknowledged, and rewarded by a grant of 2500*l.* a year, to be raised from Lord Winchester's estates.

The king, who had passed the winter (1645-6) at Oxford, in a condition to the last degree disastrous and melancholy, in the month of May escaped from that city in disguise, and threw himself upon the protection of the Scottish army, then encamped at Newark. After some negotiations, he was basely delivered up by the Scots to the parliamentary commissioners, who kept him prisoner at Holdenby, in Northamptonshire. In proportion as the king's power had diminished, the division between the Independents and the Presbyterians had become daily more apparent. In the army, the majority, with Cromwell at their head, were Independents; in the parliament, Presbyterians. Each body, jealous of the other's power, began to strive for the mastery. At length the army rebelled against the parliament; and Cromwell, aware of the advantage that would be gained by the possession of the king's person, directed one Joyce, a young and enterprising soldier, to rescue the king from the hands of the commissioners of the parliament, and to deliver him to the army (1647). This scheme was quickly put into execution; Cromwell maintaining with refined hypocrisy that he deeply regretted the disaffection which the army showed towards the parliament. The members, however, were not deceived. The Presbyterian leaders resolved, as soon as he should come into the House of Commons, to accuse the lieutenant-general of having promoted this schism, and to commit him to the Tower. Intelligence of these proceedings was quickly carried to the army; and Cromwell, perceiving that the crisis was desperate, and that some decided step must instantly be taken, hastened to the camp, where he dexterously procured himself to be invested with the chief command, and then, threatening the unpopular parliament, marched southwards to St. Alban's.

As long as there remained any balance between the rival powers in the state, each sought the support of the royalists, and the king's cause appeared not altogether hopeless; he was courted by the Presbyterians and deceitfully flattered by Cromwell. But when the leaders of the army established their dominion, the case was altered. At a conference at Windsor, opened with prayers poured forth by Cromwell himself with all the cant of fanaticism, he opened the daring counsel of punishing the king by judicial sentence. The time, however, was not quite at hand for this bold measure. The king was left in custody in the Isle of Wight, and Cromwell again took the field against the Scots in the north and the Welsh in the west, making preparations at the same time to resist an invasion from Holland threatened by Prince Rupert, to whom seventeen English ships had deserted. Again he was victorious; and his army returned to London, where they broke violently into the parliament-house while the mem-ers were in debate, seizing some, and excluding others, by he direction of Colonel Pride. The king's trial now (1649) ommenced, and in proportion as violence increased the reater were the pretensions to sanctity. Cromwell delared to the house, 'Should any one have voluntarily proosed to bring the king to punishment, I should have rearded him as the greatest traitor; but since Providence nd necessity have cast us upon it, I will pray to God for a lessing on your counsels, though I am not prepared to ive you any advice. Even I myself, when I was lately ffering up petitions for his majesty's restoration, felt my ongue cleave to the roof of my mouth, and considered this reternatural movement as the answer which Heaven, aving rejected the king, had sent to my supplications.' Hume.) The circumstances attending the king's trial re well known. Cromwell took an open undisguised part, nd, with Ireton and Harrison, was named by the dregs of e parliament among the 133 persons chosen to constitute e tribunal. One half of this number were usually abnt: but Cromwell's interest in the result was so deep at he was always present in the court. The sentence as passed, and he signed the warrant for the execuon. He was now beset with entreaties to spare the king's fe. To the intercessions of his son Richard he would arcely listen with patience; to his cousin Col. Cromwell would only reply, 'Go to rest, and expect no answer to rry to the prince, for the council of officers have been eking God, as I also have done, and it is resolved by em all that the king must die.' The execution followed cordingly. Five days afterwards the House of Lords was ted useless, and a council of state was formed, with radshaw for president and Cromwell a principal member. ifficulties soon crowded round their government. A utiny broke out in the army, which required the immeate presence of the lieutenant-general. Some regiments ere pacified with little trouble, and became submissive ter the execution of the ringleaders; but others conued to resist. At length Cromwell offered them a treaty, hich they had no sooner accepted than he faithlessly put large portion of them to death. By these means peace as restored.

In Ireland the majority were still hostile to the parliaent, and an army had been sent there to reduce the yalists to submission. Cromwell joined the troops in ugust, 1649: he besieged and took Drogheda, gave no uarter to the garrison, and proceeded to capture Wexford, ilkenny, and Clonmell. In nine months the country as nearly subdued. Satisfied with his success, he left to eton the conduct of the troops against his panic-struck dversaries; and having sailed for Bristol, proceeded to ondon, where he was received with fresh honours by the arliament.

The children of the late king had suffered deeply from heir fallen fortunes: one had died of grief at her father's xecution, another had been sent out of the kingdom by Cromwell, and Prince Charles, the heir to the crown, poor and neglected, had lived sometimes in Holland, at other times either in Jersey or in France. At length he was induced by the Scottish army to take shelter among them, a protection which he bought by subscription to the covenant and submission to restrictions so severe as almost to render him a prisoner. Whatever might be the circumstances under which this junction was formed, the return of Charles to his kingdom could not fail to alarm the English. It was instantly resolved to march northward with all the troops that could be raised. Fairfax, himself a presbyterian, refused to lead the forces, and Cromwell was therefore nominated to the command, and became the general of the commonwealth. This vast accession to his power induced him to resign the lieutenancy of Ireland, to which he had previously been appointed: perhaps a view of removing Ludlow to that post formed an additional reason for his withdrawal. Cromwell was jealous of the influence of Ludlow, who, though he did not receive this appointment, was ultimately set aside by his promotion to an official situation in that kingdom. After these and other preparations, he began his march with 16,000 men (1650). The miscarriage of provisions was at first severely felt; but when supplies arrived the troops regained their courage. The battle of Dunbar was gained by the English, and Edinburgh and Perth were taken. Upon this the king suddenly marched into England. Cromwell, who had not expected this movement, sent expresses to the parliament to inform them of what had taken place, and with forced marches pursuing the king, brought him to an engagement near Worcester, the result of which was a total defeat of the royalists (September, 1651). For this complete victory the parliament rewarded him with fresh honours and an additional pension of 4000*l.* a year.

How early Cromwell thought of taking into his hands the reins of government cannot be determined: whatever views or wishes of this kind he might have felt, they were not expressed, even to his friends, until after the battle of Worcester. Now however his mind was bent upon this object; but for some time no favourable opportunities presented themselves. The war with Holland occupied his attention and engrossed the thoughts of the nation. At length (1653), perceiving that the parliament became daily more jealous of his power, he determined to put an end to their authority. He first sent them a remonstrance; his next movement was to enter the House with an armed force, seize the mace, and to declare to them, 'You are no longer a parliament: the Lord has done with you; he has chosen other instruments for carrying on his work.' Loading the members with abuse, calling them adulterers, extortioners, drunkards, and gluttons, he drove them before him out of the House. Thus was the memorable 'Long Parliament' dissolved. The next step was to summon by name 139 persons, some gentry, some mechanics, all the very dregs of the fanatics, and to constitute them a parliament. It was obvious that such an assembly could in no way assist in the government of the realm; one measure only seemed to be expected from them, and that they quickly determined upon; it was to surrender their power to Cromwell, who, after their voluntary resignation, was declared 'Protector' by a council of the officers of his army, and solemnly installed into his dignity (1653).

The first charter of the Commonwealth was drawn up in December, 1653, by the same council of officers; it was called the 'Instrument of Government.' The second, called the 'Petition and Advice,' was framed in May, 1657, by the Parliament which the Protector had assembled in the previous year. Under the first charter, the English government may be ranged among republics, with a chief magistrate at its head. Under the second it became substantially a monarchy, and Oliver Cromwell, from 1657 to his death, was *de facto* king of England. (Hallam, *Cons. His.* ii. 421.) The difficulties of his administration were great, but they were surmounted by his vigorous abilities, which shone forth as much in wielding his power as in obtaining it. That he was both arbitrary and despotic cannot be denied. Such was the temper of the country, and, notwithstanding his general popularity, such the number of his open or secret enemies, that immediate and forcible action, though sometimes illegal and tyrannical, was absolutely required. The morality of his conduct cannot for a moment be defended. But if he would continue Protector there was little room to be scrupulous. There were opposed to him the royalists, who were still numerous; the nobility, to whom he was hateful; the whole body of Presbyterians, who were jealous of having no share in the power which they had helped to gain; and in the army, the mutinous and disaffected 'Levellers.' Severe measures then were requisite, and at times they certainly were used, not however without apparent reluctance. 'Cromwell's *general* policy,' says Sir Walter Scott (*Tales of a Grandfather*, vol. iii.), 'was to balance parties against each other, and to make each desirous of the subsistence of his authority rather than run the risk of seeing it changed for some other than their own.' The point that seemed most to perplex him was the calling together of parliaments: he would neither reign with them nor without them. He abruptly dissolved the House in 1654, in direct contradiction to the advice of Whitelock and his friends generally, who recollected the abuse that had been poured upon King Charles under similar circumstances. It was not the wish to attain an absolute despotism that prompted him to these acts, but rather an impatience at the opposition that he was sure to experience in their councils. In 1656 his successes at home and abroad encouraged him to assemble another parliament. Ireland being in the hands of the army, elected such officers as he nominated; Scotland was nearly equally subservient to him; still the majority was unfavourable to his policy. The next step was difficult. He ordered the doors of the House of Commons to be guarded, and that no member should be admitted unless he produced an order from his council. Thus he excluded nearly one hundred members who were obnoxious to him. Thus 'purified,' this assembly voted a renunciation of all title to the throne in the family of the Stuarts; and Colonel Jephson moved that the crown should be bestowed upon Cromwell. A conference was soon afterwards appointed (1657), at which the Protector's scruples respecting the assumption of the title of king were stated and argued: it was seen that his mind was wavering whether he should accept or whether he should forbear. But his prudence ultimately prevailed; he knew that the danger of acceding would be imminent, while the increase of power would be trifling; the odium in which the army had been taught to hold the regal title could never be overcome, and therefore he consented unwillingly to reject it.

As Cromwell's treatment of his parliaments was arbitrary, so also were his dealings with the courts of justice: He degraded three judges without just cause, and so intimidated the barristers that they feared to uphold clients whose causes were contrary to the Protector's wishes. To give an instance of this oppression—One Cory having refused to pay the unjust and exorbitant tax of ten per cent. which was ordered to be levied upon the property of all royalists, sued the collector. Three eminent counsel, Maynard, Twisden, and Wyndham, were employed in his cause, but Cromwell, without suffering them to enter into their argument, sent them to the Tower even for accepting the brief. Sir Peter Wentworth having brought a similar action, was asked by the council if he would give it up; 'If you command me,' he replied to Cromwell, 'I must submit;' the Protector did command, and the action was withdrawn. Equally shameless were the means which were used for the erection of the courts, by which, in 1654, Gerard and Vowel, and, in 1658, Slingsby and Hewit, were brought to the scaffold. These, and other similar acts, rendered Cromwell hateful to many of his subjects. He had suppressed some royalist insurrections at Salisbury, and executed the leaders in 1655; but now he entertained fears from the republicans also. Major Wildman, a republican, was arrested for a conspiracy against him; and such was the ill-will shown to him by the democratic soldiery as to cause anxiety for his personal safety. One Sindercome, who by an accident alone had been prevented from murdering him, was arrested and condemned; but to the disappointment of Cromwell, who eagerly desired to make a public example, the criminal committed suicide before the day appointed for his execution.

The foreign policy of the Protector has been variously estimated. It seems to have been imprudent but magnanimous, enterprising, and ultimately successful. 'Perhaps no government,' says Sir Walter Scott (*Tales of a Grandfather*), 'was ever more respected abroad.' Many memorable victories were achieved under the parliament and under Cromwell. 'It is just to say,' observes Mr. Hallam (*Const. Hist.*, vol. ii.), 'that the maritime glory of England may first be traced from the era of the Commonwealth in a track of continuous light.' A treaty, consequent on the successes of Blake, was honourably concluded with the Dutch. An expedition, more politic than just, was made against the West Indian colonies of Spain; it ended in failure and disappointment, although it gained for England the island of Jamaica, a greater and more advantageous possession than many triumphs have produced. An alliance was concluded with France in 1655 to act in conjunction against the Spanish forces in the Low Countries; Mardyke and Dunkirk were taken, and the Spaniards were afterwards wholly defeated at Dunes. Denmark, Portugal, and Sweden, eagerly sought the Protector's friendship; ambassadors flocked to his court, bearing the most conciliatory and adulatory messages.

The anxiety of all princes to be allied with so recent an usurper is very remarkable. The servility of some powers was extreme, as has been proved by several curious instances which have been collected by Mr. Harris. (*Life of Cromwell*, p. 352.)

Whether Cromwell could have maintained his authority for many years is doubtful; the prevalent discontents induce us to believe that he could not. 'He became,' says Sir Walter Scott (*Tales of a Grandfather*), 'morose and melancholy, always wore secret armour under his ordinary dress, and never stirred abroad unless surrounded with guards, never returned by the same road nor slept thrice in the same apartment from the dread of assassination; his health broke down under these gloomy apprehensions; and on the 3rd September, 1658 (the anniversary of his victories at Dunbar and Worcester, and several other important events of his life), he died of fever and tertian ague, in the sixtieth year of his age. His burial was conducted with unusual pomp and magnificence at Westminster: but his corpse was not suffered to rest in peace. At the Restoration it was disinterred by the Royalists, and, having been hung at Tyburn, was cast into a hole beneath the gallows.'

Of the numerous characters of Oliver Cromwell that have been drawn by various historians, none appears to us as a whole to be more faithful than that of Dr. Smollet. (*Hist. of England.*) It should nevertheless be recollected that the bias of the writer was strongly in favour of the high prerogative of the crown. Cromwell 'inherited great talents from nature; though they were such as he could not have exerted to advantage at any juncture but that of a civil war inflamed by religious contests. His character was formed from an amazing conjunction of enthusiasm, hypocrisy, and ambition. He was possessed of courage and resolution that overlooked all dangers, and saw no difficulties. He dived into the characters of mankind with wonderful sagacity, whilst he concealed his own purposes under the impenetrable shield of dissimulation. He reconciled the most atrocious crimes to the most rigid notions of religious obligations. From the severest exercise of devotion he relaxed into the most ludicrous and idle buffoonery. He preserved the dignity and distance of his character in the midst of the coarsest familiarity. He was cruel and tyrannical from policy, just and temperate from inclination, perplexed and despicable in his discourse, clear and consummate in his designs, ridiculous in his reveries, respectable in his conduct; in a word, the strangest compound of villany and virtue, baseness and magnanimity, absurdity and good sense, that we find upon record in the annals of mankind.'

The resemblance between the fortunes of Cromwell and of him who in more recent times raised himself from insignificance to a throne, is strong enough to strike the generality of readers. Mr. Hallam has stated (*Cons. Hist.*) the most striking points in the parallel. But the conclusion of Bonaparte's life was very unlike that of the Protector; the fortunes of one had declined for years before his death, the other retained his authority to the last hour.

Cromwell was not wanting in kindness towards his family, and always showed great affection towards his wife and children. He was once married; six children, two sons, and four daughters, survived him. Of the daughters, Bridget was twice married, first to Ireton, and afterwards to Fleetwood. Elizabeth was the wife of John Clayton, Esq.; Mary married Lord Fauconberg, and Frances was wife first to Mr. Rich and afterwards to Sir John Russell of Chippenham.

(Clarendon's *Hist. of Rebellion*; Hallam's *Cons. Hist.*; Noble's *Memoirs of Cromwell's family*; *Tracts on the Civil Wars*; Harris's *Life of Oliver Cromwell*; Crit. Review of *Life of Oliver Cromwell*; *Biog. Brit.*; *Biog. Univer.*; W. Scott's *Tales of a Grandfather*; Villemain's *Hist. de Crom.*; Smollett's and other Histories.)

CROMWELL, RICHARD, the third son of Oliver Cromwell the Protector, but the eldest that survived him, was born at Huntingdon on the 4th of October, 1626. He was educated at Felsted in Essex, with his brothers Henry and Oliver, and thence removed to Lincoln's Inn, where he was admitted in 1647. His study of the law was only nominal, for the time which he should have occupied with reading was wasted in the pursuit of pleasure. Although he had now arrived at an age when it would have been most natural for him to have desired to join his father's troops, we do not find that he showed any inclination to do so. Besides indolence and apathy, many causes have been assigned for this want of enterprise; some have supposed that his father would not suffer him to take arms; others, that Richard Cromwell's political opinions differed from the Protector's; and that as his companions were chiefly cavaliers, and the king's health had often been drank at their carousals, he was favourable to the Royal rather than the Parliamentary cause. There is, however no very clear evidence to prove this last fact, unless we may reckon as such the fact that Richard, averse to spilling blood, when the king was condemned, petitioned his father for a remission of the sentence.

At the age of twenty-three he married Dorothy, the eldest daughter of Richard Major, Esq. of Hursley, in

Hampshire, a lady sprung from a good family, endowed with many virtues, and possessed of a considerable fortune. This change in his circumstances induced him to leave his residence in London, and to establish himself at Hursley, where he lived in complete retirement, following the sports of the field and other rural pursuits. Oliver Cromwell, until he was made Protector, was unwilling to advance his son, for fear of giving umbrage to the republican party. No sooner, however, was that dignity conferred upon him, than calling Richard from his obscurity, he nominated him for the counties of Monmouth and Southampton, for which he was elected in 1654. His appointment as first lord of trade and navigation followed his election. In 1656, he was again chosen member of parliament for Hampshire and the University of Cambridge; and in the following year succeeded his father in the chancellorship of Oxford.

An accident now befel him which nearly cost him his life. After a levee held by the Protector, whilst he and other members of parliament were standing on the upper steps within the banqueting-house, the supports gave way, and the whole staircase fell with an alarming crash; youth and a good constitution alone enabled him to recover from the fractures and other injuries that he sustained. After his health was restored, his father, still anxious for his elevation, made him a privy councillor, a colonel in the army, and leader of the newly constituted House of Lords. The reign of Oliver Cromwell was now drawing to a close; both his mind and body were overwrought by the strain of continual exertion; and in the summer of 1658, he sent for his eldest son to attend him in his sickness. Richard Cromwell immediately obeyed the summons, and found the symptoms of his father's illness such as to make him extremely apprehensive for its result; in a letter written in August to a friend near Abingdon (*Parl. Hist.* 21, p. 223), he expresses in feeling and sensible terms the fears which he entertained for his life. On the 3rd of September 1658, Oliver Cromwell died, and on the next day Richard Cromwell received the sceptre of the commonwealth.

For a short time the peace of the kingdom was undisturbed, and respect was paid to the new Protector at home by his subjects, and abroad by all foreign states. Thurloe, Whitelock, and Broghill were his chief counsellors, and it must be confessed, when all the attendant circumstances are considered, their advice was none other than judicious. But tranquillity could not long be maintained: the aspect of affairs very soon began to change. Discontents prevailed; the want of resources was felt; it became necessary to call a parliament (1659), for there was in the treasury no money with which to fulfil the engagements with foreign princes that had been entered into by the late Protector. It was feared that the elections would go against the court: and every means were therefore taken to bias them. Oliver Cromwell's reformed model of representation was abandoned, and the right of returning members was restored to small boroughs, which, from gratitude, it was thought would be favourable to the court: but notwithstanding this, and all the other efforts of the government, the number of presbyterian and republican members nearly equalled that of the ministerial party. In the parliament, then, the weakness of the Protector's government was most apparent. Still it was to this body that he must trust: for in the army he had scarce any friends at all; the whole republican party were combining against his authority; Lambert was intriguing for his overthrow: even Fleetwood, his own brother-in-law, joined the discontented officers, whose faction, from the name of Fleetwood's house, in which they met, was called the 'Cabal of Wallingford House.' Richard, who possessed neither penetration nor resolution, took no step to subdue these rebels: the parliament, more alarmed, took the case into their hands. A vote was passed that no council of officers should assemble without the Protector's consent: this brought the rupture to a crisis. The army demanded the dissolution of the parliament, which the Protector wanted resolution to deny. The dissolution was equivalent to his dethronement, and he soon afterwards signed his demission in form (22nd April, 1659). His brief reign ended, Richard Cromwell descended into humble life, to the enjoyment of which his feeble unambitious character was better adapted than to the possession of power. He had no qualities which fitted him to rule. He was burdened with debts, arising partly from the pompous funeral of his father, the cost of which, amounting to 28,000*l.*, the state unworthily suffered to descend upon him. To assist him in these difficulties, the parliament voted him 20,000*l.*, annexing a condition that he should leave the palace of Whitehall. In consequence of this grant he retired to Hampton Court, but so small a portion of the money was paid, that he was still in danger of being arrested by his creditors. To leave England was his only method of escape from them, and accordingly he resided sometimes in Geneva and sometimes at Paris. At length he ventured to return to this country: a house was hired for him at Cheshunt, near London, where at first he concealed himself under a feigned name, and continued to live in strict privacy, until the year 1712, when he died in his 86th year.

Richard Cromwell was the father of two sons and seven daughters: four of his children died young, and two only survived him: he had great reason to complain of their undutiful behaviour. It has been remarked that there exists no coin or medal stamped in his reign: perhaps this may be accounted for by his never having been solemnly instituted Protector. (Hallam's *Const. Hist.;* Noble's *Memoirs;* Hume's *Hist.; Biog. Brit.*, &c.)

CROMWELL, HENRY, the fourth son of Oliver Cromwell, Lord Protector, but the second and youngest that survived him, was born at Huntingdon in January, 1627-8 He was educated at Felsted in Essex, and enrolled in the parliamentary army at the age of sixteen. In 1649, having become a colonel, he went with his father to Ireland, where he behaved with considerable gallantry. He was one of the members for that kingdom in the Bare-Bones Parliament. He married, in 1653, a daughter of Sir Francis Russell of Chippenham in Cambridgeshire, and resided at Whitehall until he was appointed Lord Deputy of Ireland, being at the time (1654) a member for the University of Cambridge. During the following year he was again sent to Ireland. It had become absolutely necessary that the estates and property of the natives should be protected from the rapacity of the republican leaders, who were aggrandizing themselves at their expense; and Henry Cromwell was considered a fit person to undertake this task, both on account of his general abilities, and the great esteem in which he was held in that country. The expectations of his friends were not disappointed, for the state received considerable benefit from his services, as soon as he succeeded Fleetwood in his office. The impossibility of procuring money from England, and the limitations of his power, materially diminished his usefulness. At length, from these causes, his government became so irksome to him, that his letters are one series of complaints, interspersed with offers to resign. Still further mortification, however, was in store for him. When his brother Richard became Protector, the council, over which he had little or no control, contracted still further the power of Henry Cromwell, who, in exchange for the title of Lord Deputy, received that of Lord Lieutenant, a miserable recompense for his lost authority.

After the deposition of his brother, Henry Cromwell was desirous of keeping Ireland for the king, and it was not until his submission was forcibly required by the parliament that his object was finally relinquished. Henry now retired to Chippenham, whence, in five or six years, he removed to his estate at Soham in Cambridgeshire, where he spent the remainder of his days, and died at the age of forty-six (1673-4). There were many excellent qualities in his character: he was generous, honest, decisive, firm, and courageous. 'All historians,' says Rapin, 'are unanimous in their praise of him, and generally believe, that if he had been Protector instead of his elder brother, the officers would either have met their match, or not attempted what they did against Richard.' Henry Cromwell had five sons and two daughters: one of his children died young; the rest survived him.

CRONSTADT (Bartza Videka), a large county in the south-eastern part of Transylvania, and in that part of it called 'the Land of the Saxons.' It is also denominated Burzenland, or Burczelland (from the river Burze), and Bartzasag. It lies immediately to the north of Wallachia, and has an area of about 787 square miles. It contains 1 free city, 4 market-towns, 26 villages, and about 13,260 houses. The county is traversed by the lofty chain of the Butscheschi, an arm of the Carpathians, of which the Butscheschi itself is 8160 feet high. On the side towards Wallachia it is completely inclosed by the Carpathian mountains, across which lead four principal passes, called the Torzburg, Temesch, Altschanz, and Bosau. The principal river is the

Alt, which receives the waters of the Burze and several other streams. The climate, though temperate, is variable, and extremely cold during the prevalence of the east wind.

The soil produces all sorts of grain and pulse, maize, millet, flax, hemp, fruits, and wood; also gold, silver, lead, and porcelain-earth; mineral springs abound, and there are several lakes, the banks and beds of which yield soda. The country is rich in game, fish, and bees; there are large herds of horned cattle; and much timber is obtained from the forests. Agricultural pursuits constitute the chief employment of the inhabitants. The population, which amounts to about 80,900, is composed of Saxons, Magyars, Wallachians, Greeks, Armenians, and some Kalibassi, the only people of that race in Transylvania. The district is divided into 3 fiscal circles, and 4 seignorial circles. The 4 market-towns are Marienburg, or Foldoár (1700 inhabitants), Rosenau (or Rosnyo) castle (2 churches, and 3300 inhabitants), Tottlau (Prashmar) (2 churches and 3000 inhabitants), and Zeiden, or Fekete Kalam (2 churches, and 3200 inhabitants).

CRONSTADT, the capital of the county of the same name, and the largest and most populous town of Transylvania, is called by the inhabitants Kruhnen, by other Saxons, Krünne and Krohne, and in antient records, Brassó. It lies in 35° 36′ N. lat., and 25° 33′ E. long., in a narrow valley, inclosed by mountains, at an elevation of 1896 feet above the level of the sea. It is defended by a strong castle on the banks of the Farkas. The inner town, which is in the form of a rectangle, is well-built, and surrounded with towers, walls, and ditches; it contains about 615 houses, and has a population composed entirely of Saxons or their descendants. The inner town was built in the beginning of the fourteenth century, when it was called Corona. There are three suburbs, the Altstadt, the Bolounya, or Brassovia, and the Upper Town, or Bolgár, which consists of 1500 houses, partly built on hills amidst orchards and gardens, and inhabited chiefly by Wallachians. Including these suburbs, Cronstadt has above 3400 houses, and nearly 36,000 inhabitants. The inner town has five gates, six principal streets, which are straight and regular, and a spacious market-place with two fountains. Among the chief buildings are the Protestant high church, a striking edifice, erected in 1383, in the Gothic style. It is 112 paces long, 59 broad, supported by 22 Tuscan columns, and surmounted by a tower 138 feet high, in which is a bell 6¼ tons in weight. The Roman Catholic church of Peter and Paul was built in the Italian style in 1766—82. The remaining buildings of note are the town-hall in the market-place, with a handsome tower, the old Lutheran church of St. Bartholomew, the gymnasium, and the great mart, or Kaufhaus, which was erected by Apollonia Hirschin, the wife of the sheriff, in 1545. This mart is the general place of rendezvous for merchants of all nations, Saxons, Hungarians, Armenians, Greeks, Turks, Wallachians, Jews, Gipsies, and Bulgarians, who assemble here to expose their goods, while Turkish money-changers are seated outside and around the market-place for the exchange of Austrian and Turkish coins.

Cronstadt contains a Lutheran gymnasium with a library, a Roman Catholic high (*primar*) school, a military academy, a normal school, besides various elementary and girls' schools, two hospitals, a house of correction, and a house of industry.

The inhabitants, among whom are many gipsy labourers, carry on considerable manufactures, especially cloth, of which above 40,000 pieces are annually made, linens, cottons, coarse woollens; stockings are also manufactured, and form a branch of trade with Wallachia; flasks of maple wood, of which above 30,000 are annually sent to Wallachia, Hungary, and Sclavonia; woollen bobbins, of which 200,000 pieces are sent by Greek merchants to Asia Minor, &c. There is a paper-mill, and two wax bleaching grounds. Cronstadt was the first place in Transylvania where a paper-mill and printing-press were established; the earliest works issued from the latter were the 'Augsburg Confession' and the writings of Luther.

Cronstadt is the first commercial town of Transylvania, and carries on a considerable transit trade in Austrian and Turkish produce, principally cattle and wine from Wallachia; manufactured goods, corn, salt, &c., of which the annual circulation is from 500,000*l.* to 600,000*l.* The business is chiefly transacted by the Greek trading company, and at large annual fairs.

CRONSTADT, a town, fortress, and port, in the Russian government of St. Petersburg, from which city it is forty-seven versts, or about thirty-one miles distant, is situated in 59° 58′ N. lat., and 25° 49′ E. long.: it is built at the south-eastern extremity of Cotlin-Ostrof, an island in that part of the Gulf of Finland called the Bay of Cronstadt, about sixteen miles from the mouth of the Neva. This island, a bed of chalk, formerly called Rétouzari by the Finlanders, is seven miles in length and about one mile in breadth. At the entrance of the harbour, on an island opposite the citadel, lies the fortress of Cronschlott, built by Peter the Great. The passage between this fortress and Cronstadt is 2000 paces in width, and has ample depth for the largest vessels.

Besides its importance as the great naval station of the Russian fleet, Cronstadt is the harbour of St. Petersburg. All vessels proceeding to that port are searched here, and their cargoes sealed, and such as are too large for the shallow waters of the upper Neva unload their cargoes at Cronstadt, and transport them in smaller craft.

Cronstadt, which is built in the form of an irregular triangle, is strongly fortified on all sides. It has three harbours, lying to the south of the town; the outer or military harbour, which is entirely surrounded by a massive and strongly fortified mole, is a rectangle, stretching out into the sea, and is capable of containing, besides smaller vessels, above thirty-five ships of the line. It is now however so shallow at low water, that many of the ships are obliged to anchor in the middle harbour, which is properly intended for the fitting out and repairing of vessels. It contains the slips, a powder-magazine, a manufactory of pitch, tar, &c. The third and innermost harbour, which has space for 1000 vessels, and runs parallel with the middle harbour, admits only merchantmen, for which there is besides an excellent roadstead immediately outside of the port, which is defended also by the citadel, constructed on a rock in the middle of the sea of Cronstadt.

All these harbours are well secured, but in consequence of the freshness of the sea-water no vessels can be preserved in them above twenty years. They are besides detained a great part of the year by the ice in the bay of Cronstadt, which usually prevents vessels from entering after the end of November, or leaving before the end of April, or sometimes even later. Vessels are repaired and built in the large canal of Peter the Great, which runs directly into the town between the middle and merchant's harbour. It is 2160 feet long, 56 wide, and 26 deep; the side abutments, &c. are of solid masonry, and it is filled with water by means of sluices, which is again pumped out by steam-engines. It was commenced in 1721, and finished by Elizabeth. Near it are the various docks, in which ten ships can be repaired at once; the foundry, which supplies annually 1200 tons of bombs, balls, &c.; the admiralty rope-walk, tar-works, and excellent wet docks. By the new Catharine Canal, commenced in 1782, which is 1880 fathoms long, government vessels are enabled to take their stores, munition, &c. directly from the store-houses. The town is very regularly built, and contains many fine, straight, and well-paved streets, and several public squares. The houses however, with the exception of those belonging to government, are chiefly of one story, and built of wood. There are three churches and two chapels of the Greek worship; that of the Transfiguration, built of wood by Peter the Great, is very large, and covered with images; that of the Trinity is of older date; St. Andrew's church is in the Byzantine taste, and surmounted by a handsome cupola. There is a Lutheran, an Anglican, and a Roman Catholic church.

The city has three gates, and is divided into two parts, the Commandant and Admiralty quarters, which are subdivided into four districts. Between the Peter's and Catharine canal is the old Italian palace built by Prince Menschikof, who took this island from the Swedes in 1703. It is at present occupied by the school for pilots, a large establishment, where above 300 pupils are educated for the naval service, and 20 for the merchant service. The naval hospital is a large and well-regulated institution, with accommodation for 2500 patients, and a separate building for officers of the navy. Among other public buildings we may mention the admiralty, exchange, custom-house, barracks, a Protestant gymnasium, various schools, an invalid asylum for 60 females, the nobility's club, and the house of Peter the Great, where he resided for some time: but with the exception of a few old oaks, which he is said to have planted with his own hand, there are no remains of the former garden.

The permanent population of Cronstadt, exclusive of the arrison, the pupils of the naval school, workmen, and ilors, is not considerable; during the summer it amounts upwards of 40,000 individuals of various nations; of ese, next to the Russians, the English are the most numerous. The inhabitants derive their chief support from e fleet, trade, and shipping. The town presents an appearance of great bustle and activity during the summer, ut in winter all is dead and stagnant.

The town and port were laid out and the buildings far lvanced by Peter the Great, who founded Cronstadt in 710; but it did not receive its present name ('the town of e crown') until the year 1721. At the northern extremity of the island are Fort Alexander and the battery f St. John; the latter is built on piles in the Neva.

CROOKED ISLANDS, a group similar to the Caicos, uated on a coral bank, 23 miles to the eastward of Long land, on the Great Bahama Bank. They consist of three rge islands, called Crooked, Acklin's, and Fortune, besides veral small keys and rocks. The edge of the bank, like ost others in these seas, rises abruptly from a depth of wards of 100 fathoms all round; and the highest land is ly 200 feet above the sea. These islands form a part the Bahama government. At the south-west end of rooked Island there is an unsafe anchorage, with a custom-house and post-office, where the Bahama mail is left, d taken up by the Jamaica packet monthly on her voyage home. The population is very scanty, and supplies are arce and dear; but a stock of turtle is constantly kept in nds. The bank is contained between the parallels of ° 5 and 22° 50′ N. lat. and the meridians of 73° 50′ and ° 30′ W. long.

CROPS, ROTATION OF. [ARABLE LAND.]

CROSIER, from Crocia, in the Latin of the middle age, pastoral crook or staff, formerly used by bishops and bots. Several writers have supposed (see Macklain's ote to Mosheim's *Eccles. History*, edit. 1758, vol. i. p. 9; and the *Antiquarian Repertory*, 1st edit. ii. p. 164) at it was derived from the *lituus*, or augural staff of the omans: but they are mistaken. It was evidently copied om the well-known and common staff which shepherds, en to this day, make use of to catch hold of the hinder g of their sheep in order to take them; and it has reference to the pastoral office of the bishops and clergy, according to the words of our Saviour, 'I am the good shepherd,' and to the common name of the clergy, pastors or epherds.

These pastoral crooks were sometimes barely curled, and others very richly ornamented; a few instances occur in hich the upper part finishes in the form of a mace. The eur de Moteon, in his 'Voyages Liturgiques de France,' vo. Par. 1718, p. 272, says, many of the early crosiers were ot curved. The abbot's staff was usually of a simpler rm than that of the bishop. One of the earliest abbatical affs, the form of which can be seen in England, is probably that represented on the tomb of abbot Vitalis, in the lister of Westminster Abbey, who died in 1082. The most plendid episcopal crosier remaining is that of William of Wykeham, of silver gilt, richly enamelled, which is exhibited to visitors in the chapel of New College, Oxford, to the ociety of which the bishop himself bequeathed it in 1404. See Lowth's *Life of Wykeham*, 3rd edit. 8vo. Oxf. 1777, . 263, where it is engraved.) Crosiers in wood in antient imes were usually buried with bishops and abbots in their offins; such a one, of red wood, the top carved into the ude form of a ram's head, was found many years ago, upon pening the coffin of bishop Grosteste at Lincoln, who died n 1253. It lay across the body from the right shoulder to he left foot. At the bottom of the neck of this staff, upon brass plate, was this inscription: 'Per baculi formam Prelati discito normam.' (Gough, *Sepulchr. Mon.* vol. i. . 47.)

CROSNO, an antient royal town in the circle of Jaslo, the north-eastern part of Austrian Galicia, lying in a autiful and fertile valley between the Wyslaka and Morava. It contains upwards of 600 houses, with about 5000 habitants; an old palace, a chapter-house, a handsome othic collegiate church, built on the foundations of a lace of Arian worship, a Capuchin monastery of freestone, Minorite cloister, and an hospital. The people are much gaged in the manufacture of inferior articles; the fairs are umerously attended, and it is a place of deposit for the ines of Hungary consumed in Galicia.

CROSS. Various religious edifices called crosses, from their being surmounted with this emblem of Christianity, have been erected in England and on the continent. Of these the most remarkable in England are those built by the command of Edward I. in memory of his queen Eleanor. Three of these still remain, at Geddington, Northampton, and Waltham Cross, near London. The last, which is the most elegant, consists of four stories. It is hexagonal on the ground plan, and beautifully enriched; the story immediately above this is supported by buttresses, and formed into niches in which are three figures of the queen. The core at the back of the figures is carried up beyond the niches, and has been restored with a battlement and a cross sustained on a crocketted spire. Churches have usually crosses fixed on their gable ends. Market-crosses were formerly very common in England. They are often designed with niches and vaulted, thus forming an open chamber, as at Salisbury and Chichester. Winchester-cross, which is one of the most perfect of the crosses erected for religious purposes, is of much later date than those erected by Edward I. Near Ely, on the road to Downham-market, there is a singular cross, consisting of a long slender stone shaft, on the top of which there are richly carved niches projecting beyond the sides of the shaft. There is a representation of a cross on some terra cotta lamps in the British Museum. The largest constructed crosses are those of St. Peter's at Rome and St. Paul's, London.

In some of the Catholic processions in Rome enormous crosses, constructed of wood and card-board, are carried, balanced in a waistband round the body of a strong man.

CROSS, from the Latin 'Crux.' This cruel mode of punishment appears to have been in use from the earliest recorded periods of history. It was possibly the invention of some barbarous tribe to prevent the escape of a captive by fastening him to a tree, or used to inflict death on an enemy by leaving him to expire of want, or a prey to birds and beasts.

Crosses, whatever was the original form, were, in course of time, made of two pieces of wood. These crosses have been divided by antiquarians into three kinds. The crux decussata, or cross divided like the letter X, and usually called St. Andrew's cross; the crux commissa, or joined cross, consisting of an upright piece of timber with a transverse piece on the extreme top at right angles with the first, like the letter T; and the crux immissa, or let-in cross, in which the transverse piece of timber is let into the upright, but placed somewhat below the top of the upright in this form +. This is the cross on which Christ is usually represented to have suffered, and though there may not be any absolute authority for ascertaining the precise form of the cross used on that occasion, yet the circumstance of an inscription having been placed over his head renders the conjecture probable.

Amongst the Carthaginians, persons of all conditions, even commanders of armies, were subjected to it, but amongst the Romans it was considered as the punishment of slaves, and inflicted on that class only. With respect to the Jews, it seems doubtful whether crucifixion, as we understand it, was a mode of punishment used by them in antient times. The putting the sons of Saul to death by the Gibeonites has been adduced as furnishing evidence that crucifixion was practised by them (2 Samuel, cap. 21); but the practice does not seem to warrant the conclusion. It is however to be observed that the term 'hanging on a tree' is used in Scripture to describe crucifixion. (*Acts*, 10th chap., 38th verse.)

Previous to crucifixion the sufferer was scourged. He was also forced to carry his own cross; and this (amongst the Romans at least) probably arose from the disgust and horror with which this instrument of punishment was viewed and considered by that people, and their disinclination even to touch it. (Cicero *in Verrem.*) The criminal was accordingly condemned to bear his own instrument of torture. Previous to the infliction of the punishment, the sufferer was stripped naked, and it is probable that he was laid down on the cross for the purpose of having the nails driven in his hands and feet, or being fastened with ropes, which was sometimes the case. The cross was then elevated. Afterwards the legs were broken, wounds inflicted with a spear, or other sharp instrument, to hasten death, but this was not invariably done. As death, in many cases, did not ensue for a length of time, guards were placed to prevent the relatives or friends of the crucified from giving them any relief, or taking them away whilst alive, or removing their bodies after they were dead.

The representations of crucifixions by painters are, in our opinion, calculated to give very erroneous notions both of the cross itself and the mode of punishment. It is not probable that the crosses actually used were so lofty or so large and massive as those which we see in pictures. Instruments of such dimensions would be perfectly unnecessary for the purpose. When we read in Josephus of hundreds of Jews being crucified by Vespasian and Titus in a day, we cannot suppose that so great a quantity of timber would be used on those occasions. The circumstance of the sufferer carrying his own cross weighs against the probability of its being of the size which these representations give it. It is not unusual in paintings to represent crucifixion as taking place after the cross is elevated, and the executioner is represented standing on a high ladder, and driving a nail into the hand of the crucified person. It seems much more likely that the sufferer was nailed to the cross before it was raised and fixed in the ground. 'Pone crucem, servo,' 'Put the cross to the slave,' is the expression used by Juvenal. Crucifixion sometimes took place with the head downwards, and St. Peter is said to have suffered death in this way. Death by the cross, in a strong and healthy person, must necessarily have been tedious and lingering, and instances have occurred of persons who, after remaining some time on the cross, were taken down, and survived. When the crucified person was only attached to the cross by ropes, this seems by no means extraordinary; and even when it took place by nailing, neither the wounds themselves nor the quantity of blood lost would be sufficient in all cases to bring on speedy death. During the reign of Louis XV. several women (religious enthusiasts, called Convulsionaires) voluntarily underwent crucifixion. Dr. Merand, an eye-witness at some of the meetings of these persons, relates that he was present at the crucifixion of two females, named Sister Rachel and Sister Felicité. They were laid down, fixed by nails five inches long driven firmly through both hands and feet into the wood of which the crosses were made. The crosses were then raised to a vertical position. In this manner they remained nailed, while other ceremonies of these fanatics proceeded. Sister Rachel, who had been first crucified, was then taken down: she lost very little blood. Sister Felicité was afterwards taken from her cross. Three small basins, called palettes, full of blood, flowed from her hands and feet. Their wounds were then dressed, and the meeting was terminated. Sister Felicité declared that it was the twenty-first time she had undergone crucifixion. (Justus Lipsius, *Roma Illustrata.*)

CROSS-BOW. [ARCHERY.]

CROSSARCHUS. [VIVERRIDÆ.]

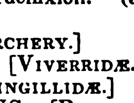
CROSSBILL. [FRINGILLIDÆ.]

CROTALO'PHORUS. [RATTLESNAKE.]

CRO'TALUM (κρόταλον), an antient musical instrument, which, it appears from medals, was used by the Corybantes, or priests of Cybele. The Crotalum differed from the sistrum, though the names are often confounded, and is by some supposed to have been of the castanet kind (*Dict. de Trevoux*). Some consider it as a cymbal of small dimensions; and from the allusions to it by Virgil, Lucretius, and others, we are inclined to be of the latter opinion.

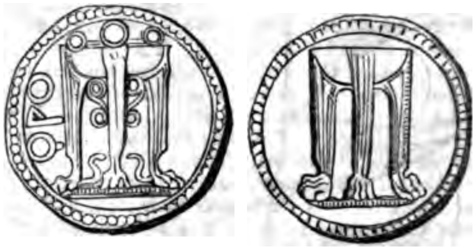
CRO'TALUS. [RATTLESNAKE.]

CROTCHET, in music, a character or note formed of a round head, and a stem descending from the left side of the upper part—



It is the fourth part of a semibreve, and in slow time (*largo*, for instance,) its duration is about one second.

CROTON (Κρότων), now Cotrone, a town on the east coast of Calabria, with a castle and a small port. [CALABRIA.] The district of Cotrone, one of the four into which the province of Calabria Ultra 2 is divided, contained, at the census of 1824, 37,175 inhabitants, chiefly employed in agriculture. Croton was one of the oldest and most flourishing Greek colonies in Magna Græcia: its circuit was twelve Roman miles. It was famed for the salubrity of its climate, the fertility of its territory, and the beauty of its women. It was engaged in wars with its neighbours of Sybaris and the Locri; it defeated the former (Herod. v. 44), and was defeated by the latter in a great battle on the banks of the river Sagra. It was afterwards taken by surprise by Dionysius of Syracuse, and subsequently devastated by Pyrrhus. During the second Punic war it was besieged by a combined force of Carthaginians and Bruttians, and the inhabitants, who were reduced to 20,000, were unable to defend the large extent of their walls. They surrendered, and afterwards sought a refuge among their antient enemies the Locri (Livy, xxiii. 30). The Romans afterwards sent a colony to Croton. This town was the birthplace of Milo the athleta, of whose strength wonderful stories are told, of several celebrated physicians and philosophers, and was also the residence of Pythagoras.



Coin of Croton.

British Museum. Actual Size. Silver. Weight 112 grains.

CROTON, an euphorbiaceous genus comprehending a large number of species, many of which have important medical properties. It is distinguished from other genera of its order by monœcious flowers; the males with a 5-parted valvular calyx; 5 petals, 5 glands alternate with the petals; and a definite number of distinct stamens; the females with a 5-parted calyx; no petals; three bifid or multifid styles; 5 glands surrounding the ovary, and a tricoccous fruit. The species are extremely diversified in appearance, some being trees, others bushes, others herbaceous plants; many with serrated or lobed leaves, many with entire ones; sometimes covered with hair, sometimes naked; and now with a small compact, now with long lax inflorescence. The following are a few of the more remarkable species:—

1. *Croton Cascarilla.* Leaves lanceolate, acute, quite entire, stalked, downy on the under surface. Stem arborescent. A native of the Bahamas, St. Domingo, and Florida. Fée considers it quite certain that this species is what furnishes the cascarilla bark of commerce; but others ascribe it to *Croton Eleutheria;* and Schiede suspects that it may be rather the produce of *C. Pseudo-china*, which he found to be the real Quina blanca of the apothecaries of Jalapa.

2. *Croton Tiglium.* Leaves ovate, smooth, acuminate, serrated. Stem arborescent. Flowers in terminal spikes. Fruit smooth, the size of a hazel nut. An inhabitant of the Moluccas, Ceylon, and other parts of the East Indies. This plant is at once the most active and dangerous of drastic purgatives; every part, wood, leaves, and fruit, seems to participate equally in the energy. The leaves are so acrid as to inflame the mouth, lips, and fauces of those who merely chew them, bringing on swelling and producing a sensation of burning as far as the anus. The seeds thrown into water intoxicate fish. Ten or twenty fruits bruised with honey have been known to kill a horse by the violent diarrhœa they have produced. Hence the oil obtained from the seeds, when used medicinally, has to be administered with extreme care.

3. *Croton lacciferum.* Leaves ovate, downy, serrulated, stalked; calyxes downy; flowers in terminal spikes; fruits small and velvety. A native of the East Indies. This species is said to furnish the finest of all the sorts of lac, but scarcely ever to find its way to England. It is very pure, of a bright red, and furnishes a brilliant varnish in Ceylon.

Croton Draco, a Mexican plant, with long, heart-shaped, woolly leaves; with *C. sphærocarpum* and *sanguifluum* yields, when wounded, a resinous substance of a deep red colour, resembling dragon's blood. Others are merely aromatic; from *C. balsamiferum*, the liqueur called *Eau de Mantes* is distilled; *C. aromaticum, niveum, fragrans* and *coriaceum*, have similar qualities; and *C. thuriferum* exudes a fragrant resin analogous to incense.

[Croton Tiglium.]

cinal Properties.—Cascarilla bark is yielded by the
Cascarilla (Don), a tree or shrub, growing in the vi-
f Jalapa, and in the district of Plan del Rio, in the
e of Vera Cruz, Mexico, where it is known by the
Copalche, or Quina Blanca. It most likely comes to
through the Bahama islands, from one of which the
ion Eleutheria is derived; but it is not yielded by
nt indigenous to these islands. (D. Don, in Jamie-
urnal, vol. xvi. p. 367.)
bark occurs in pieces about a foot long, which are
or overlapping; externally covered with a cuticle,
asily peels off, so that the liber or bark is often ex-
in which case it feels soft and cork-like. The
externally is yellowish, ash-grey, or varying to red-
wn; this last colour is mostly owing to the pre-
f lichens. The surface is also marked by irregular,
ngitudinal furrows. The inner surface is a dirty or
own colour. Odour faintly aromatic: taste bitter,
pleasant, and stimulating. No alkaloid has been
l in it, but it possesses much volatile oil; one pound
yields one drachm and a half of volatile oil. This
s sometimes mixed with the cinchona barks,
alled gray-fever bark; a substitution in no respect

ction of cascarilla on the human system depends
n its bitter principle, and partly on its volatile oil;
former it approaches the pure bitters, by the latter
natic stimulants. It possesses this great advantage
nost all other tonic medicines, that it is more easily
l by the stomach, when no other affection of that
xists than debility and inactivity. This property
y be imparted to other tonics by the addition of aro-
while it is possessed naturally by this spontaneous
ation. In the treatment of pure indigestion from
s of the stomach and alimentary canal, cascarilla
he preference. It is likewise of much utility in the
nt of intermittent and nervous fevers, and chronic
a dependent upon debility; provided no inflam-
condition of the mucous membranes of the stomach
ines co-exists.
er or infusion is the best mode of administration;
n is objectionable from dissipating the volatile oil.
TON OIL. The seeds of the Croton Tiglii were formerly used as a drastic purgative medicine, under the name of grains of Tilly, or Molucca grains; but at present the oil only is employed. The seeds are roasted and then subjected to compression; the oil is therefore termed an expressed oil. It is of a honey-yellow or brownish colour, of moderate consistence, having an odour resembling the resin of jalap; the taste is at first slightly rancid, afterwards acrid, causing a feeling of burning in the throat, which lasts for several hours.

A portion of the oil is taken up by alcohol, and more by æther; it is however soluble in every proportion in fixed and volatile oils. It is supposed to contain a peculiar principle termed Tiglin, in the proportion, when the oil is genuine, of 45 per cent. It is often adulterated with olive or castor oil, which admixtures may be detected by the process suggested by Dr. Nimmo. An artificially prepared substitute, sometimes met with, is a mixture of the resin of jalap, Canada balsam, fixed oil, euphorbium, &c. (Horst.) The oil of the seeds of Jatropha Curcas (Linn.) is also sometimes mixed with the genuine oil. In the dose of one drop (when the pure oil is used) it produces considerable purgative effect, and may be very advantageously employed when difficulty of swallowing exists, since its application to the tongue is often sufficient to ensure the purgative action. Hence in cases of apoplexy, or paralysis of the throat, the desired effect may be obtained even when the patient is insensible. In the treatment of that form of inflammation of the brain termed hydrocephalus, even when effusion appears to have taken place, and torpor or paralysis exists, croton oil will often bring about the recovery of the sufferer. (See Abercrombie on *Diseases of the Brain*, 1st edit. p. 157.) In cases of impending apoplexy croton oil is of incalculable value. It is likewise used, but sometimes very improperly, in cases of obstruction of the intestinal canal. It is however useful in aiding in the expulsion of the tapeworm, when proper anthelmintic medicines have been prescribed. The powerful impression which it makes on the intestinal canal renders it useful in some cases of dropsy. It is in most instances proper to combine it with castor oil, almond emulsion, or an alkali, to lessen its acrimony.

CROTO'PHAGA, Linn.; *Crotophagus*, Browne, Brisson; a genus of birds placed by Lesson under the third family *Hétéroramphes*, of the order *Grimpeurs* (scansores*), Cuvier; *Zygodactyli*, Temm.; *Sylvains Zygodactyles*, Vieill.

Bill snort, very much compressed, arched, without dentilations, elevated, and surmounted by a vertical and trenchant crest; nostrils basilary, open; fourth and fifth *quills* longest; *tail feathers* long, rounded.

These birds are called *Ani* and *Anno* in Guiana and Brazil, and *Anno* in Paraguay. In Mexico they are named, according to Hernandez, *Cacalototott*, and in the Antilles *Bouts de petun*, *Amangoua*, *Diables de Savannes*, and *Perroquets noirs*. In Cayenne their common name is *Bouilleur de Canari*. Their general colour is black, with more or less of metallic reflections.

Geographical Distribution.—A considerable portion of America; principally the hot and humid parts, but the south more especially; and the Antilles.

Habits, Food, &c.—The anis live in flocks, and are so far from timid, that when they see their companions fall before the gun, the survivors fly but a short way, and then again pitch. Bushes, the skirts of woods, and the borders of flooded savannahs are their favourite haunts. Their food consists of small lizards, insects, and seeds. Many pairs are said to use the same nest, built on the branches of trees, and of large dimensions, when considered in relation to the number of couples occupying it, where they lay and hatch their young in concert.

Example, *Crotophaga Ani.* Black, with bronzed tints in some lights. Size rather larger than that of the common blackbird: less than that of a jackdaw. Locality, moist savannahs and the neighbourhood of water, in the West India Islands, Carolina, Brazil, Paraguay, &c. It is the *Razor-billed blackbird of Jamaica* of Catesby, the *Savannah blackbird* of the English colonists, and *the great blackbird* of Sloane.

Browne (*Hist. of Jamaica*) thus describes it. 'This bird is about the size of a Barbary dove, or something larger, black all over, and splay-footed, like a parrot. It has a long square tail, a broad compressed bill, and a short thin tongue; but the beak, or upper part of the bill, is flatted or the sides, arched and sharp above, and straight at the edges below. They live chiefly upon ticks and other small vermin, and may frequently be seen jumping about all the cows and oxen in the fields; nay, they are often observed to fly on their backs, unless they lie down for them, which, if much troubled with ticks, they generally do when they see the birds about them; but if the beast be heedless, they hop once or twice round it, looking it very earnestly in the face every time they pass, as if they seemed to know that it was only requisite to be seen, to be indulged. They are very noisy birds, and one of the most common sorts in all the pastures of Jamaica. Their flight is low and short.

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* Birds which have the external toe directed backwards.

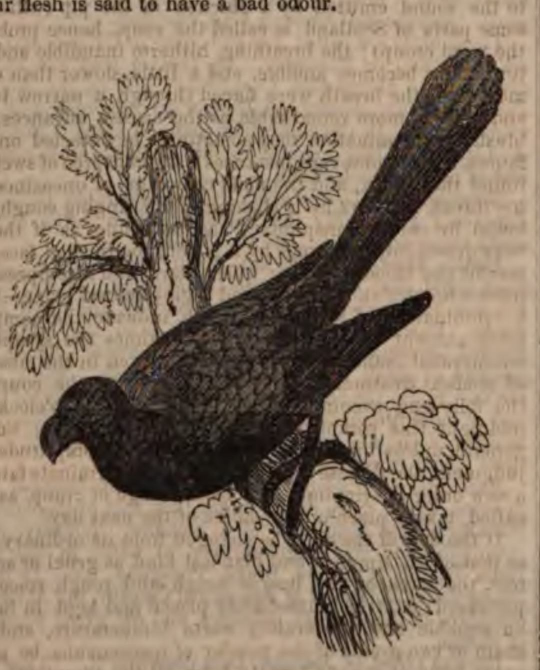
Sloane thus describes his specimen, under the name of *the great blackbird*. 'This was thirteen inches long from the end of the bill to the end of the tail, and about fifteen inches from the end of one wing to the end of the other, both being extended; the bill was three-quarters of an inch long, and black, the under mandible being straight, the upper of a singular make, distinguishing it from other birds; for it was arched or round, raised high, flat and thin on the upper round edge. The feet have three toes before and one behind (though Marcgrave says otherwise). The legs are two inches long, and black as jet; the middle toe before is one inch and a half long, armed with a pretty sharp claw, and the other toes proportionable. The colour of the feathers all over is black. The stomach of this bird was pretty thick; it was very full of grasshoppers, beetles, &c., disjointed and partly dissolved.

'It haunts the woods on the edges of the savannahs, and is very common, making a loud noise upon the sight of mankind, which alarms all the fowl in their neighbourhood, so that they are very prejudicial to fowlers; but, on the other hand, when negroes run from their masters and are pursued by them in the woods to be brought back to their service, these birds, on sight of them, as of other men, will make a noise and direct the pursuers which way they must take to follow their blacks, who otherwise might live always in the remoter inland woods in pleasure and idleness.'

'Perhaps this bird may have the toes sometimes two before, at other times two behind.'

Sloane's doubt may have arisen from a casual examination of dead specimens. The fact is, that the external toe in some scansorial birds can be directed backwards, but not forwards to any extent.

These birds are easily tamed, and may be taught to speak. Their flesh is said to have a bad odour.



[Crotophaga Ani.]

CROUP, a specific inflammation of the air tubes, giving rise to a peculiar secretion, which concretes almost immediately it is formed, producing a false membrane, which lines the affected parts. It has been shown [CATARRH] that the mucous membrane which lines the air passages is subject to two different kinds of inflammation, each presenting distinctive characters. In one the inflammation produces a secretion which does not concrete, constituting all the varieties of bronchitis, catarrh, &c. In the other the inflammation produces a secretion which consolidates almost the moment it is formed, giving rise to the various phenomena which constitute the peculiar disease denominated Croup.

That the inflammation which terminates in the formation of the secretion peculiar to croup is of a specific nature, is argued, first, because it uniformly terminates in the production of this peculiar secretion; and, secondly, because this secretion is obviously not dependent on the intensity of the inflammatory action, since the phenomena characteristic of inflammation are often less acute in croup than in catarrh. It has been conjectured that catarrh depends upon inflammation of the secreting follicles of the mucous membrane, and that croup depends upon inflammation of the capillary arteries of its tissue, a conjecture which is probably correct, though in the present state of our knowledge it must be regarded merely as a conjecture. As the inflammation, however, presents in the essential phenomena characters so different, it is convenient to distinguish the one from the other by distinct names, and accordingly the former is termed Catarrhal, and the latter Plastic Inflammation

The false membrane, the result of plastic or croupal inflammation, moulds itself to the part inflamed; it does not extend beyond the inflamed portion of the mucous membrane; it varies in thickness from half a line to a line; it is of a white or whity-brown colour; it has the consistence of boiled white of egg, and its firmness is always greatest where it is thickest. When it is raised from the mucous membrane, the latter is always found to be reddened and swollen, but rarely to the degree common in catarrh.

This morbid secretion is most commonly poured out on that portion of the windpipe which constitutes the larynx; hence in general the larynx forms the peculiar and proper seat of croup; but the site of this adventitious membrane is by no means confined to the larynx; it often extends above to the glottis and epiglottis, and below to the bronchial tubes. When, as happens in the great majority of cases, the adventitious membrane is confined to the larynx and epiglottis, it presents the characters just described; but when it extends into the bronchial tubes it becomes modified in its appearance. It is then generally 'formed into a single cylinder, but occasionally into a series of tubes inclosed within each other in the closest contact, and forming altogether a solid body, of a thick and tolerably firm structure, and in the exact form of the tube from whence it has been abstracted. Upon making a transverse section of this polypiform substance, concentric laminæ are very apparent. It adheres but slightly to the mucous surface, and may easily after death be drawn out entire, presenting a complete mould of a large bronchial tube, with all its subdivisions, down to its minutest ramifications.'

Though in the croup the deposition of the adventitious membrane is commonly confined to the larynx, yet other parts of the mucous membrane in the immediate neighbourhood of the larynx are sometimes the seat of plastic inflammation, terminating in the formation of a precisely analogous morbid secretion. Occasionally 'small yellowish-grey spots appear upon the fauces, surrounded by the mucous membrane, highly and darkly reddened. These spots enlarge, coalesce, and form a continuous false membrane, of the colour and consistence of the buffy coat of the blood, lining the throat more or less completely. Sometimes it is seen to cover the posterior half of the tongue, so that its anterior part might be elevated by a probe in a membranous form; occasionally, though not often, it passes down the œsophagus even into the stomach, but much more frequently it extends into the lung, producing all the symptoms of croup. When plastic inflammation is seated in the fauces, it gives rise to a disease called Cynanche Maligna, or Gangrenous Sore Throat, so named from the supposition that the spots on the fauces consist of gangrenous sloughs; but more careful observation has demonstrated that they consist of an adventitious membrane. Nevertheless, gangrene does occasionally, though not very rarely, co-exist with the deposition of a fictitious membrane, that is, the false membrane is deposited over a gangrenous surface."

It is remarkable that in general the seat of plastic in flammation is strictly limited to the larynx, trachea, and bronchi in children; and to the fauces in adults: hence children are by far the most subject to croup, while those of more advanced age are seldom or never attacked with croup as a primary disease, but with cynanche maligna, or gangrenous sore throat.

The most striking and characteristic symptoms of croup of course depend on the consequences that result from the obstruction to the free passage of the air to the lungs, that is, impeded respiration and change of the voice. The respiration is impeded in proportion to the quantity of adventitious membrane that is formed, and the consequent degree in which the calibre of the air-tube is diminished; in proportion to which must of course be the diminution in the column of air admitted to the lung. The air-passage in the progress of the disease is often obstructed to such a degree as to produce a most painful feeling of suffocation, attended with all the signs that denote the imminent danger of suffocation, and death is constantly occasioned by the narrowing of the air-tube to such an extent as actually to produce suffocation. In milder cases, when not impeded to this extreme degree, the respiration is still always difficult, anxious, and distressing. The edges of the circumference of the inferior extremity of the adventitious deposit being loose, mucous, and soft, frequently adhere to each other, so as to close up the tube, and require a strong effort of inspiration to overcome the temporary obstruction. 'I have seen,' says Dr. Davies, 'a slight film of pseudo-membrane traversing the upper part of the larynx suffocate an infant almost instantly. The dyspnœa becomes always great when the concretion separates, and if it be not quickly expectorated, often destroys the patient immediately.'

Owing to the diseased condition of the air-tubes the acts of respiration and of coughing produce peculiar sounds. The inspiration is sonorous and ringing, as if the sound were formed and resounded in a brazen tube. Sometimes it is dry and hissing, resembling the sound produced by a piston forced through a dry pump, or by a crowing noise similar to that emitted by a chicken in the pip. The croupal cough is a peculiar, loud, clangous, ringing sound, which has caused it to be almost universally compared to the crowing of a cock. The voice partakes of the same character, being shrill and hoarse.

The fever excited in the system by this local inflammation is commonly acute and intense. The skin is burning hot; the face flushed, sometimes covered with perspiration; the eyes prominent, injected, or watery; the carotid arteries throb powerfully; the jugular veins are tumid, and the pulse at the wrist is frequent, hard, and wiry. Sometimes, on the contrary, the febrile symptoms are of a low or asthenic character; the skin cool, and of a dirty pallid colour; the pulse frequent, but exceedingly feeble; the breath fœtid, and the general prostration extreme.

As the disease advances, the restlessness and anxiety of the patient increase; the hand is constantly applied to the throat, which is often slightly tumified externally, and sometimes painful to the touch; the respiration becomes more and more difficult, the cough convulsive and exhausting, the countenance bloated, and the cheeks and lips either livid or exceedingly pale. In this stage the pulse becomes small, weak, and irregular, the eyes sunk, the skin cold and clammy, the voice lost, or capable only of a whisper; the head is constantly tossed back; the throat often seized as if to remove an obstacle to respiration; violent efforts are made to expand the lungs, and death at length puts an end to a state of intense suffering, either by convulsive suffocation, or by the subsidence of the restlessness and violence into a state of profound lethargy and stupor.

Croup, as has been stated, is almost peculiar to infants. It may occur at any period from the second month after birth to puberty; and the younger the child is, after it is weaned, the more liable it is to the disease. It is most apt to occur in the sanguineous temperament and the full habit. It often seizes a child not perfectly recovered from a previous illness, and is liable to a recurrence at distant intervals on exposure to causes which ordinarily produce only common catarrh. Yet it occasionally occurs in the adult, generally as a consequence of its extension from the fauces to the larynx. It is chiefly prevalent in the neighbourhood of large bodies of water, running or stagnant, salt or fresh, and especially among the ragged and half-starved children of the poor, who live on the sea-coast, or near the banks of rivers or canals. But it also occasionally prevails in other situations as an epidemic, especially during the continuance of north or easterly winds, after heavy and long-continued falls of rain.

There is perhaps no disease to which the human body is subject the progress of which is so frightfully rapid. In a few hours after the attack, the morbid secretion is often formed to such an extent, as to prove inevitably mortal; yet the inflammation of which it is the result might have been checked by immediate, vigorous, and judicious treatment. It is therefore of the last importance that those who have the care of infants and young children should be familiar with the first signs of the approach of this dreadful malady Of these a graphic description has been given by Dr. Cheyne who had abundant experience of the disease in situations in which it is but too prevalent. After having pointed out the importance of attending to the first appearance of hoarseness, which in very young children does not usually attend common catarrh, and consequently, when observed in a child living in a district which generates croup, this symptom is always much more deserving of attention, especially if accompanied with a rough cough, than it would be after puberty, this excellent physician says,—

'In the approach of an attack of croup, which almost always takes place in the evening probably of a day during which the child has been exposed to the weather, and often after catarrhal symptoms have existed for several days, he may be observed to be excited; in variable spirits; more ready than usual to laugh or to cry; a little flushed, occasionally coughing; the sound of the cough being rough, like that which attends the catarrhal stage of the measles. More generally however the patient has been for some time in bed and asleep before the nature of the disease with which he is threatened is apparent; then, perhaps without awaking, he gives a very unusual cough, well known to any one who has witnessed an attack of the croup; it rings as if the child had coughed through a brazen trumpet; it is truly a *tussis clangosa;* it penetrates the walls and floor of the apartment, and startles the experienced mother—"Oh, I am afraid our child is taking the croup!" She runs to the nursery, finds her child sleeping softly, and hopes she may be mistaken. But remaining to tend him, before long the ringing cough, a single cough, is repeated again and again: the patient is roused, and then a new symptom is remarked; the sound of his voice is changed; puling, and as if the throat were swelled, it corresponds with the cough: the cough is succeeded by a sonorous inspiration, not unlike the kink in pertussis—a crowing noise, not so shrill, but similar to the sound emitted by a chicken in the pip (which in some parts of Scotland is called the roup, hence probably the word croup); the breathing, hitherto inaudible and natural, now becomes audible, and a little slower than common, as if the breath were forced through a narrow tube; and this is more remarkable as the disease advances. A blush of inflammation may sometimes be detected on the fauces, and in some rare instances a slight degree of swelling round the larynx, and the child complains of uneasiness in his throat, and says he is choking. The ringing cough, followed by crowing inspiration, the breathing as if the air were drawn into the lungs by a piston, the flushed face, the tearful and blood-shot eye; quick, hard, and incompressible pulse; hot dry skin; thirst, and high-coloured urine—form a combination of symptoms which indicate the complete establishment of the disease. Sometimes the symptoms enumerated subside about midnight, even in the absence of medical treatment; perhaps to return in the course of the following evening. From seven or eight o'clock till midnight this complaint is always at its height; but in general, unless the patient be treated with promptitude and judgment, the disease may be expected to terminate fatally; a new order of symptoms, the second stage of croup, as it is called, taking place in the course of the next day.'

If the diet of the child be changed from its ordinary food to that of the simplest and blandest kind, as gruel or arrow-root, the moment the hoarse cough and rough voice are perceived; if it be immediately placed and kept in bed in an equable and moderately warm temperature, and one grain or two grains of the powder of ipecacuanha be given every hour, or every alternate hour, all the symptoms may subside without any further remedies, and the threatened attack be effectually prevented; but if with this hoarse cough and rough voice the child be allowed its ordinary diet, and be exposed as usual to the open air, the attack will hasten on in the mode described until the disease is fully established; and then any treatment that may be employed, to be of the least avail, must be most energetic. The prompt employment of the most powerful remedies is indispensable; yet they must be administered with cautious and judicious boldness. It is a disease in which the inflammation, which it is the great object of medical treatment to subdue, is not so much of a violent as of a peculiar character, and this renders it necessary that the practitioner should be guarded in the administration of some of the more powerful remedies to which he must resort, and especially in the employment of blood-letting. When the fever is intense, the skin hot, the pulse full and hard, and the patient plethoric, bleeding must, indeed, be employed, and carried as far as the strength will admit; but experience has amply shown that in this disease the strength will not admit of its being carried as far as is safe and even necessary in diseases purely inflammatory. Bleeding, either by the lancet or by leeches, which latter should never be applied to the throat itself, but to its immediate neighbourhood, is a most powerful auxiliary; but it is not *the* remedy to be relied on. *That* is mercury, which should be given instantly and efficiently, that is, in doses of from one to three grains of calomel every hour, or every two hours, until the mouth be affected, the breath fœtid, or the patient relieved. If the calomel irritate the bowels, the *hydrargyrum cum creta* may be substituted, or a free inunction of the mercurial ointment, which latter may be conjoined with the calomel, or the mercury and chalk powder. Many practitioners prefer the full employment of tartar emetic to the mercurial plan of treatment. All agree that blisters are useful auxiliaries, applied at the bottom of the sternum, or between the shoulders, but never at the throat. The vomiting produced by the tartar emetic sometimes powerfully promotes the expulsion of the adventitious membrane. There are other remedies of minor importance, the judicious employment of which may assist in putting a stop to the progress of this most formidable malady. The use or abuse of these cannot be discussed here; but what has been stated may excite the attention of the mother, and guide her to the choice of efficient remedies in the first hour or two of the attack, during which it may not be always possible to obtain medical aid. (Dr. Cheyne *on Croup;* Dr. T. Davies *on the Diseases of the Lungs and Heart, in loco.* Gœlis *Tract. de Rite Cognoscenda et Sananda Angina Membranacea;* Copland, *Dict. of Pract. Med.;* and *Cyclop. Pract. Med. in loc.*)

CROWFOOT, the vulgar name of the different species of Ranunculus.

CROWLAND. [LINCOLNSHIRE.]

CROWN, the ornament of the head which denotes imperial or royal dignity, from the Latin *corona.* The radiated appears to be the earliest form of the royal crown with which we are acquainted. It appears upon the heads of the figures which are represented upon the Persian darics· radiated crowns also occur on the coins of Antiochus IV. of Syria, and of his successors; on many of those of the Greek cities; and on those of Augustus and other emperors down to the very destruction of the Roman empire. The strophium, bandelet, or fillet, and the laurel wreath, were also used as crowns in very remote times: the strophium was the most universal of all. In Constantine's time the fillet of pearls came into use; which the latter Byzantine emperors turned into a kind of coronet. Focas, as he is called upon his coins (nct Phocas), has a plain low crown. Later emperors varied its form according to their fancy. Manuel Palæologus, who was crowned in 1363, is represented wearing a close crown studded with pearls. (See Du Cange, *Hist. Byzant.*, p. 242.) The trefoil upon the crown is thought to be of Gothic introduction. We find it on the crowns of Clovis and his sons, which has induced antiquaries to call it the fleur-de-lis (Montfaucon, *Monum. de la Mon. Fr.*, p. xxviii. Diss. prelim.), but the truth is, these trefoils were used on Constantinopolitan crowns before the time of the Franks (Ibid., p. xxxii.), and afterwards on those of German princes no way allied to Charlemagne. (See Montf. i., xxxiii.) Aubrey, the antiquary, was of opinion that the fleur-de-lis is really a spear-head adorned; no flower of that kind having the middle part solid.

Crowns were placed on the statues and images of the heathen gods, as well as worn by the priests in sacrificing. Some antiquaries have even thought that the crown was originally rather a religious than a civil ornament; and that it only became common to kings, inasmuch as the antient kings were priests as well as princes.

In regard to the crown as used in our own country, a fillet diadem of pearls appears on several of the Saxon Sceattæ; upon one or two others a radiated diadem occurs. (See Ruding's *Annals of the Coinage of Britain,* pl. 6, 7.) Similar diadems or fillets adorn the heads of many of the Heptarchic kings, and continue as the most common crown upon our coins through the whole of the Saxon series. The circle surmounted by three small projections first occurs upon the coins of Athelstan; on some of Edred's coins the projections end in pearls. A radiated cap appears first on a coin of Ethelred II., and the trefoil ornament upon the crown upon a few of the coins of Canute. Several varieties of arched cap and crown appear upon the coins of Edward the Confessor. (See Ruding's plates, 15—23.) The close or arched crown, which appears on some of Edward the Confessor's coins, is used on all the types of Harold, and was adopted by the earlier Norman kings. On Edward the Confessor's and the Conqueror's coins, we see labels appended at each ear; these, as we learn from an anecdote related by William of Malmsbury, in wearing the actual crown, were fastened by a clasp or button beneath the chin. On the coins of Stephen and Henry II, the open crown with fleurs-de-lis appears. Henry III. wears on his seals a crown fleury, pointed or rayed, the points raised, but not high, between the flowers; in his second seal the points are wanting, as on that on his tomb; but in Mathew Paris we read he was first crowned with a circle of gold. Edward I. has a similar crown on his coins and seals to that of Henry III. as well as his queen upon her tomb: so have his successors Edw. III., Rich. II., Henry IV. and V. Evelyn (*Numism.*, p. 34) says the monarchs of England were the first who pretended to the arched crown; that is, as it appears in modern times. Selden (*Titles of Honour,* edit. 1762, b. i. chap. 8) says he had read that Henry V. was the first of them who had a crown of the kind. In a window of Ockholt-house in Berkshire, built by John Norreys, Esq., in 1465, there certainly remained, till within a very few years, the arms of Henry VI. and his queen Margaret of Anjou, in separate coats, both surmounted by the arched barred crown; from Henry VII. downward, this arched crown, with the globe and cross, has been continued.

In France Louis XII. wore a single bar arched over his crown, about 1500; before, only a cap, till he married Henry VIII.'s sister. (See his coins.) Till Francis I. an open flowery border, somewhat like our ducal coronet, was generally used. In Spain, Philip II., after he married Queen Mary, used a barred crown. In Germany, Maximilian, grandfather of Charles V., first wore an arch over a ducal coronet. In Denmark, Christian III., after he came into England, used the barred crown. James IV., on his marriage with Margaret, daughter of Henry VII., introduced it into Scotland. John Duke of Braganza was the first who used it in Portugal. (See Gough's *Sepulchr. Monuments,* i., cxxx. cxxxi.; ii. ccviii.)

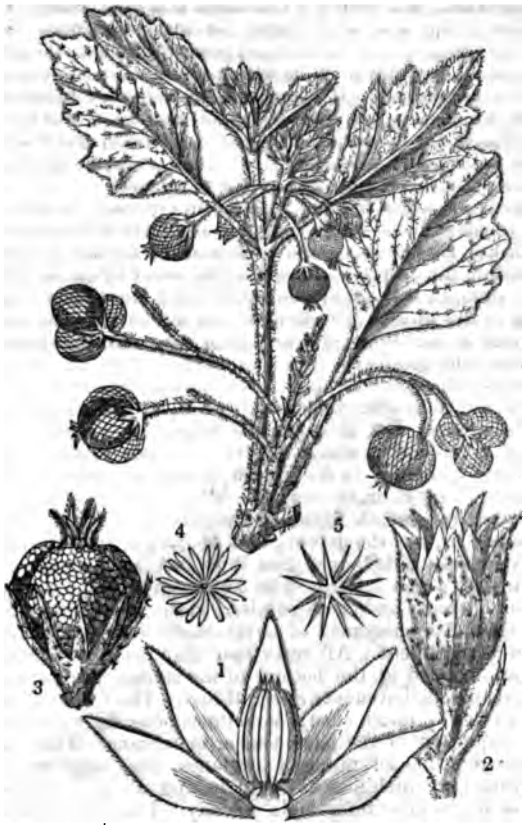
Among the Romans there were various kinds of crowns distributed as rewards for military and other achievements. The principal were the Civic, the Mural, the Naval or Rostral crown, the Obsidional, and the Triumphal.

CROWN OF THE SUN, *Ecu d'Or au Soleil,* was a French coin, first struck by Louis XI. of France, in 1475. (Le Blanc, *Traité Historique des Monnoyes de France,* 4to, Par. 1690, p. 305.) The reader is, no doubt, aware, that from an early period the circulation of foreign money, of various countries, was not only adopted but even legalized in England. By proclamation, 25 May, 14 Henry VIII., *Crowns of the Sun,* ducats, and crowns of gold not of the sun, were ordered to be received in currency, the crowns of the sun not clipped to go at four shillings and fourpence sterling. Under Edw. VI., in August, 1549, they were ordered by proclamation to pass for seven shillings: and again reduced to pass for six shillings and fourpence, by another proclamation, dated in the same year on Dec. 1. They were kept at the same rate of currency, six shillings and fourpence, by proclamations from Queen Mary I. in 1553 and 1554.

CROWS. [CORVIDÆ.]

CROYDON, a market-town in the hundred of Wallington, county of Surrey; nine and a half miles south of London: population in 1831, 12,447. The parish is very extensive, being thirty-six miles in circumference, and containing about 10,000 acres. In the survey of 1646, it is described as consisting of 836 acres, 'having herbage for all manner of cattle, and mastage for swine without stint.' The name, which in Domes-day Book is Croinedone (croie, *chalk*, and dune, *hill*), appears to be derived from the locality of the town on the edge of the chalk. The situation, from its contiguity to the Bansted Downs, is pleasant and very healthy. The houses form one principal street, about a mile in length; of neat appearance and tolerably well paved and lighted. Some antiquarians (Dr. Stukeley's *Itinerary*) identify Croydon with the Noviomagus of Antoninus, there being still, on Broad Green, in the neighbourhood, some traces of the Roman road from London to Arundel. At the Norman Conquest, the manor, with a royal palace, was given to Lanfranc, archbishop of Canterbury. This palace, during a long period, was a chief residence of the succeeding primates. It was built of timber, and was in 1278 in its original state. No part of the present structure is older than the fourteenth century; and large portions of it were rebuilt by archbishops Wake and Herring. Here queen Elizabeth and her court were sumptuously entertained by archbishops Parker and Whitgift. In 1780 it was sold, and became a calico manufactory, and the gardens were used for bleaching grounds. The present summer residence of the archbishop of Canterbury is three and a half miles from Croydon, at the mansion in Addington Park, which stands on the site of a hunting seat of Henry VIII. During the wars of the barons with Henry III. in 1264, the citizens of London retreated to Croydon, and were there defeated by the royal troops with great slaughter. Croydon Park, in the time of Richard II. was kept by the mayor of London, Sir Wm. Walworth, who stabbed Wat Tyler. Antiquities worthy of notice are a cluster of twenty-five tumuli and barrows on a hill towards Addington; and on Thunderfield common, a circular encampment enclosing with a double moat an area of two acres. Gold coins have been found of Domitian, Valentinian, and other Roman emperors. There are several antient charitable foundations, the principal of which are the hospital or almshouse of the Holy Trinity, built by archbishop Whitgift in 1596, and well endowed for the maintenance of thirty-four decayed housekeepers; and a school for girls, founded by archbishop Tennison. A school for 150 children is supported by the society of friends. The East India Company's College of Cadets at Addiscombe House near Croydon, has fourteen professors and masters, and about 140 students. The parish church of St. John's is the largest and finest in the county. It is built of freestone and flint, with a lofty embattled tower surmounted with pinnacles. The interior contains several magnificent monuments of the archbishops there interred; Drs. Herring, Potter, Wake, Abbot; and especially those of Sheldon and Whitgift. The windows were formerly remarkable for much beautiful painted glass; but in Cromwell's time the Puritans completely destroyed it. Near the church is the source of the Wandle, a small stream which flows into the Thames and abounds in excellent trout. A new church has been erected by the parliamentary commission. The town hall, in which the assizes are held, and the gaol, are commodious and substantial stone buildings. There are barracks with extensive accommodation for artillery; and a theatre. The Croydon canal communicates with the grand Surrey canal at Deptford. A railroad runs from Wandsworth to Croydon, and thence to Merstham near Reigate. A new rail-road to London is about to be constructed. Croydon is the election town for the eastern division of the county. The market on Wednesday is well supplied with corn, especially oats, and the fair on October the second is noted for the sale of walnuts. An elaborate account of the town, church, and archiepiscopal palace, is given in Dr. Ducarel's history of Croydon (inserted in the *Bibliotheca Topographica Brit.* vol. ii.). See also Lysons' *Environs of London*, vol. i. p. 170, and Britton's *Beauties of England*, vol. xiv. p. 122.

CROZO'PHORA TINCTO'RIA, a small, prostrate, hoary annual, with slender cylindrical stems, about a foot long; soft, oval, alternate, almost rhomboidal leaves, which are plaited and curled at their edge; small flowers arranged in short clusters; and drooping fruit composed of three blackish rough cells. It is a native of barren places all over the south of Europe, and is cultivated about Montpelier for the sake of the deep purple dye, called Tournesole, which it produces. Its properties are acrid, emetic, corrosive, and drastic, like the most virulent Euphorbiaceous plants.



1, a male flower cut open, showing the stamens; 2, a closed flower; 3, a nearly ripe fruit; 4, 5, different kinds of starry scales, with which all the green parts are covered.

CRUCIBLE, a chemical vessel in which substances are exposed to high temperatures. Crucibles are made of various materials, forms, and sizes, and are often called *melting pots*. Earthen crucibles are used for the purpose of assaying ores, as those of lead, copper, and tin. For these purposes the refractory kind, called Hessian or Cornish crucibles are prepared; they cannot however be employed for heating saline, alkaline, or earthy matters, as these would act upon them. Sometimes they are made of commoner and more fusible clays when not required to withstand a high temperature. Crucibles are occasionally used made of porcelain, but they are extremely apt to crack.

Black-lead crucibles, formed of about three parts of finely-powdered plumbago, and one of good clay, are also much employed, especially in melting metals; they are more expensive than earthen crucibles, but are less liable to crack.

Glass-makers' crucibles are usually made of Stourbridge clay.

In fusing the alkalis, potash and soda, silver crucibles are used; but as they readily melt, they are not much employed for other purposes.

For chemical uses platinum crucibles are principally employed; they withstand a high temperature, and are not in general easily acted upon. The alkalis however, and the alkaline nitrates, and the alkaline earths, act upon them; and those metals which readily fuse, such as bismuth, lead, and tin, immediately destroy them when heated in them. Large platinum vessels are employed for the concentration of sulphuric acid; no acid acts upon them, but they are dissolved by chlorine.

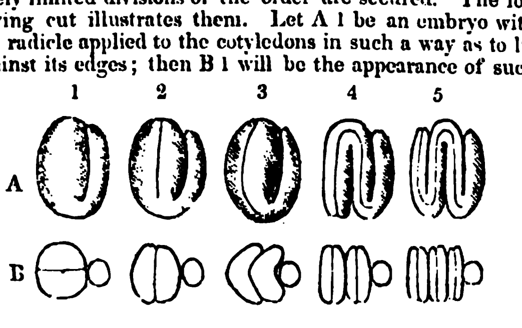
CRUCI'FERÆ, a very extensive and most natural assemblage of plants, called Tetradynamæ and Cruciatæ by Linnæus, and Brassicaceæ by others. It comprehends the mustard, cress, turnip, cabbage, scurvy-grass, radish, horse-radish, and similar plants, having a pungent principle diffused more or less in their sap, and giving them valuable antiscorbutic qualities. All the species have an inflorescence without bracts, a calyx of four sepals, four petals with long claws, and their blades placed something like the arms of a Maltese cross, whence their name; six stamens, four of which are longer than the other two; and a fruit consisting of two cells, with a central frame, to which is fitted a pair of deciduous valves, and from the sides of which under the valves is stretched a thin double transparent diaphragm. In each cell are two or more seeds, with an embryo folded upon itself and destitute of albumen. The form of the fruit is extremely variable; when it is long and slender, it is called a Silique; and when short and round, a Silicle: hence the two divisions of the Tetradynamæ of Linnæus into *Siliquosæ* and *Siliculosæ*.

About a couple of thousand species are dispersed over the milder parts of the world, refusing alike to exist beneath the severe cold of the arctic zone and the excessive heats of the tropics. A large proportion consists of inconspicuous and useless weeds: many are objects of beauty, from the size and gay colours of their petals; and the names already mentioned show that another part of the order consists of plants useful to man.

[Cheiranthus Cheiri.]

1, a flower from which the petals have been removed; 2, the stamens; 3, a section of the ovary; 4, a ripe fruit, from which the valves are separating; 5, an embryo.

Owing to the number of the species, and the great resemblance between them, the systematic arrangement of Cruciferous plants was until late years exceedingly unsatisfactory. It has however been discovered, that the embryo presents the most constant character, and that by five modifications of the manner in which it is folded up, five precisely limited divisions of the order are secured. The following cut illustrates them. Let A 1 be an embryo with the radicle applied to the cotyledons in such a way as to lie against its edges; then B 1 will be the appearance of such an embryo when cut across, and C 1 will be a sign expressing the mutual positions of the radicle and cotyledons by a circle and two bars; these are Pleurorhizeæ. Then fig. A 2 will be same embryo with the radicle applied to the back of the cotyledons; and B 2 and C 2 will give the section and sign of what are called Notorhizeæ. When the cotyledons instead of being flat are channelled so as to receive the radicle in a kind of groove, as at A 3, it gives the division Orthoploceæ. If the cotyledons are so long as to be doubled twice, A 4, they constitute Spirolobeæ; and if, as at A 5, the cotyledons are doubled three times, they indicate the division Diplecolobeæ. Upon these distinctions all recent arrangements of Cruciferæ have been formed.



CRUCIROSTRA. [FRINGILLIDÆ.]

CRUDEN. [CONCORDANCE.]

CRUSADES. Under this name are designated the religious wars carried on for two centuries between the Christians and Mohammedans, at a time when diplomatic negotiations were unknown, and the sword decided all matters in dispute between one nation and another. The cause was ultimately lost by the Christians, who sacrificed in the struggle the lives of several millions of their brethren, though their claim was originally a reasonable one. In the beginning the Christians demanded only a free pilgrimage to the holy sepulchre, but afterwards the contest was for the possession of Jerusalem. The Crusades however were by no means wars of conquest or of royal caprice; man fought against man for some higher yet mistaken principle. Hence their struggle offers something more honourable than the generality of wars, and deserves particular attention on account of its influence upon the civilization of Europe.

As long as the caliphs of Bagdad and after them the Fatemides of Egypt possessed Palestine the Christians were not checked in the exercise of the religious practice of visiting the holy sepulchre, which was in harmony with the opinions of that age: the Caliph Harun-al-Rashid had even the keys of the holy sepulchre forwarded to Charlemagne as a present. But when the Turks had effected the conquest of Palestine, the hospitality of the Arabs gave way to the brutality of the new possessors; the Christians were subjected to so many vexations, that the whole of Europe re-echoed with the complaints of the pilgrims; who instead of returning to their homes loaded with holy relics, brought back only wonderful tales of their insults and sufferings.

In consequence of this, Pope Sylvester II. (who died in 1003) began to preach a crusade against the Seljuk Turks for the conquest of the holy sepulchre. Sixty years afterwards, when only 2000 pilgrims had returned to Germany out of 7000—who had been sent to Palestine by their bishops—and the possession of Jerusalem had fallen into the hands of the Turkish chief Ortok, this untoward event filled Europe with consternation, and a desire to revenge the wrongs of the pilgrims. A single spark only was wanting to inflame the whole of the western empire to a contest with the sword for that privilege which Harun-al-Rashid had acknowledged.

Thirty years however elapsed before Pope Urban II. decreed the first Crusade. First at the Council of Piacenza (March, 1095), afterwards at that of Clermont in Auvergne (November, 1095), supported by the ambassador of the emperor of Constantinople and numerous powerful lords, he proclaimed the sacred war, and appointed the 15th of August (1096), the Day of Assumption, for the departure of the army. The minds of the Christian warriors had been previously excited by the preaching of Peter of Amiens (the Hermit), and by the loud complaints of the Patriarch of Jerusalem; who, provided with letters of credit from the pope, travelled through Europe, and filled all classes of society with enthusiasm for this holy warfare. Those who determined to set out for the Holy Land wore on their breast the figure of a red cross, and hence the name of Crusaders.

First Crusade. The departure of the army having been deferred for a year, Peter of Amiens, Walter Habenichts, Count Emiko of Leiningen, and the priest Gottschalk, impatient of delay, and prompted by religious fanaticism, set out with an immense multitude which is stated at 80,000 or 100,000 men, besides women and children, and a crowd of followers. This army, after having ill-treated and robbed the Jews in their own country, was reduced to one-third of its number in Hungary; the remainder was cut to pieces at Nicæa in Asia Minor.

The east was now threatened with a national migration from the west. The bulk of the army was twice as numerous

ous as that of their forerunners. It was headed by the blest knights of those times, Godefroy of Bouillon, Duke Lower Lorraine, Baldwin his brother, Hugo the Great, brother of the king of France; Robert, Duke of Normandy, son William the Conqueror; Raymond of St. Gilles, Duke of oulouse, and Bohemond, Prince of Tarentum. The general dulgence proclaimed at Clermont, the feudal system, hich led the vassals to join in the sentiments of their sovereigns, combined with the religious fanaticism of the many d the interested views of the few, created this formidable my. The pope had the address to dispose the heads of e Crusaders to acknowledge him formally as the sovereign of all the lands which they intended to conquer. The sults of this expedition were of great importance. After ossing the sea into Asia, the Crusaders took possession Nicæa in Asia Minor, and Laodicæa and Antiochia in yria. Bohemond obtained the principality of Antiochia, aldwin that of Edessa. New Christian principalities arose so in Tripolis, Sidon, Tyre, and other places. In the ean time Jerusalem was no longer in possession of the urks. The Caliph Mostaali had taken it from the successors of Ortok (1096), and had again united it to Egypt, aking a rival caliphat. [See FATEMIDES.]

The Crusaders however did not allow themselves to be topped by this change of circumstances in their victorious march; they advanced with 60,000 men, the relics of their army, against Jerusalem, besieged the town, took it (1099—June 7, July 15), and preserved it, together with all their conquests, in the great battle of Ascalon, against the caliph of Egypt and the Seljuk chieftains. It is said that the number of slain in the conquered town amounted to 70,000. The Jews were burnt in their synagogues.

Consequences of the First Crusade. Kingdom of Jerusalem.—Godefroy of Bouillon was elected king of Jerusalem, a new state, with a considerable territory. The constitution of this new kingdom was regulated by a statute called 'Les Assises de Jerusalem.' Godefroy died one year after his accession to the throne; his brother Baldwin was his successor, who was followed by Baldwin II. (1118), Fulk (1131), Baldwin III. (1148), Almerich (1162), Baldwin IV. (1173), Baldwin V. (1186), who was followed by Guido of Lusignano, who reigned till 1187, when Saladin put an end to the Christian kingdom. These kings of Jerusalem were compelled to fight with a force of only about 12,000 regular troops against the power of two mighty enemies, the Turks and the Fatemide caliph of Egypt.

Crusaders' Religious Military Orders.—The first Crusade brought two military religious orders into existence, the Knights of Jerusalem, instituted by Baldwin I., and the Knights Templars, established by the joint efforts of Hugo de Payens, Godefroy of St. Adhemar, and seven other knights. The German Knights of the Cross are of later origin.

Second Crusade.—Though the Franks had extended their possessions from the mountains of Armenia to the very boundaries of Egypt, their strength was too feeble to prevent (under the government of Baldwin III., A. D. 1144) the Atabek of Mosul from taking Edessa. The Atabeks were governors of the dynasty of the Seljuks. One of the Atabeks, named Emad-eddin Zenghi, from Mosul, having made himself independent, transmitted the kingdom to his son, Nureddin the Great, who fixed his residence in Aleppo, and became an object of terror both to the Christians and to the Fatemides. In the mean time the kingdom of Egypt had passed into the hands of Selaheddin (Saladin the Great), an event which took place under the following circumstance:—In order to settle a contention about the succession, Nureddin sent a Kurd, named Shirkuh, into Egypt. The peace-maker usurped the government for himself, and bequeathed it to his brother Ayub's son, who after the death of the last of the Fatemides seated himself on the throne of these rival caliphs, and conquered Egypt, nominally for the Caliphat of Bagdad. This son of Ayub was called Saladin; and the dynasty of which he became the founder is in history known by the name of the Ayubides. After Nureddin's death, Saladin conquered almost all Asia Minor, in addition to Tripolis and Tunis, and destroyed the Christian kingdom of Jerusalem.

After the conquest of Edessa, Bernard of Clairvaux took upon himself the office of Peter the Hermit, and preached second crusade, in consequence of which two of the greatest Christian chiefs, the German emperor Conrad III., nd Louis VII., king of France, were induced to take the cross (1147). For this undertaking Western Europe armed 140,000 knights and near a million of foot-soldiers, and yet in spite of their mighty superiority the expedition failed. The changes which had taken place in the East had raised up a new enemy against the Crusaders in the emperors of Constantinople, who were less afraid of the peaceful governments of the Turks in Asia Minor and Egypt, than of the depredation and ravage which the passage of a disorderly army, such as that of the Crusaders, would cause to their possessions. Hence the artifice and treachery of the emperor Manuel Comnenus prepared the way for the destruction of the Christian armies. The German emperor, misled by treacherous scouts, lost in the defiles of Taurus the bravest of his soldiers; the relics of his army were almost destroyed at the siege of the fortress of Iconium. The troops of the French were also defeated by the Sultan of Room, and annihilated before Damascus, a town which the Christians had in vain attempted to take by storm. The relics of the two armies united in one body (1149). Thus the expedition of the Crusaders in the East was a complete failure. The only successful result of this undertaking was the retaking of Lisbon from the Moors, which was effected by the Christian navy.

Situation of the East after the Second Crusade.—Baldwin III. however did not give up his plans in despair. His army was at intervals increased by small bodies of Crusaders, who came to his assistance from Europe. Nureddin the Great felt more than once the power of the Christian warriors. Yet all these advantages were frustrated by the discord of the Crusaders, fomented by the rivalship of the Templars and the Knights of Jerusalem. Baldwin was succeeded by Almeric, called also Amauri, who was followed by Baldwin IV., who died likewise soon after the battle of Ramla. After his death Guido of Lusignano was completely defeated at the battle of Tiberias; he was taken prisoner, together with the Grand Master of the Templars, and many noble knights (1187). Saladin took possession of all the important places in Palestine, together with Jerusalem and its environs, and put an end to the Christian kingdom of Jerusalem, which had existed a century. But Saladin showed himself a generous conqueror; he granted to the Christians the possession of the Sepulchre of Christ, and allowed the prisoners to return home. The patriarch Heraclius, the clergy, the knights, and many soldiers returned to their homes, or withdrew to the few towns which the Christians still possessed on the coast of Palestine.

Third Crusade.—Bishop William of Tyre brought this bad news to Rome, which it is said caused the premature death of Pope Urban IV. The youth of Europe were again summoned to appear under the banner of the cross, not to defend the right of visiting the Holy Sepulchre, for Saladin had already granted this privilege to the Christians, but the lives of the bravest knights of Europe were to be thrown away on the insane project of again conquering the kingdom of Jerusalem. Europe obeyed the summons. The German emperor, Frederick Barbarossa, Philip Augustus, king of France, and Richard Cœur de Lion, king of England, and several German princes, enlisted themselves as Crusaders. The Italians appeared in arms under the bishops of Ravenna and Pisa. The Knights Templars, and those of Jerusalem, who were scattered about Europe, collected themselves again in strong bodies, and sailed for the Holy Land. Fifty vessels left the harbours of Denmark and Friesland and thirty-seven those of Flanders for Palestine. The expenses of the war were supplied by a tithe, called Saladin's tithe, which the pope ordered all Christians, including even the clergy, to pay. The emperor, Frederick I., a man of ability and experience, had found means to compel the Emperor of Constantinople to favour the undertaking; he was also engaged in negotiations with the Sultan of Iconium, who however betrayed him. By these means, and with a force of 600,000 armed men, this expedition might have succeeded; but the Crusaders did not carry on their military operations in one body. Several troops of Italian, Greek, and German adventurers, who advanced before the great army to place themselves under Conrad of Montferrat, Lord of Tyre, and Guido of Lusignano, made an unsuccessful attempt to take Ptolemaïs (St. Jean d'Acre). Frederick I. met with a premature death by bathing in the waters of the river Cydnus, 1190. His son, Frederick of Swabia, who died soon after, put himself at the head of the relics of the imperial army;

but was not able to give a favourable turn to the siege of Acre. At length Philip Augustus and Richard Cœur de Lion appeared on the battle-field. Richard had already taken and sold to Guido of Lusignano the island of Cyprus. The kings joined their armies before Ptolemaïs, and their united forces at last succeeded in taking this single fortress, after three years' siege and nine battles.

In consequence of these long and sanguinary struggles, the Christian army was so reduced, that the kings, despairing of success, thought of returning to Europe. Philip Augustus left Palestine soon after the capture of Ptolemaïs. Richard Cœur de Lion followed him after a short struggle with Saladin, with whom he made truce, and left him in possession of Jerusalem (1192). In the mean time Philip Augustus had made an inroad into Richard's dominions of Normandy. The mild, benevolent, and generous Saladin the Great died 1195, in Damascus, in his fifty-seventh year. During this crusade there arose a new military order, called the German Cross Knights, whose first grand master was Henry Walpode.

Situation of the East after the Third Crusade.—Conrad of Tyre had married the sister of Baldwin II., and thus acquired a claim upon the throne of Jerusalem. Guido of Lusignano however had already assumed this title. Conrad died by the hand of assassins. His widow afterwards married Guido's brother, and the two brothers assumed the name of kings of Jerusalem. One of them, named Almeric, died likewise, and the imaginary crown of Jerusalem was the inheritance of John of Brienne, the husband of the daughter of Conrad king of Tyre (1210).

Fourth Crusade.—Isaac Angelos, the Emperor of Greece, was robbed of his throne and deprived of his eyes by his own brother (1194). His son Alexius fled to Venice to ask for assistance (1203). In the mean time the enthusiast Fulk of Neuilly and Pope Innocent III. had prepared for a new crusade, which was headed by several Italian and French noblemen, such as Thiebauld of Champagne, Count Boniface of Montferrat, Count Baldwin of Flanders, and Simon of Montfort. The Doge of Venice, Arrigo Dandolo, induced the Crusaders to take the town of Zara in Dalmatia for the republic of Venice. The Crusaders, probably at the instigation of Dandolo, instead of waging war against the infidels, took an active part in the affairs of Greece, conquered Constantinople, and after having elevated to the throne or deposed several emperors, at length put the imperial crown upon the head of Baldwin of Flanders, giving him the fourth part of the empire, and dividing the rest among themselves.

This behaviour drew upon them the popish interdict, which however was of no long duration: Pope Innocent absolved them. Thus the chiefs of the Franks ruled for about fifty years over the empire of the East, around which arose three new Greek principalities, Nicæa, Trebizond, and the despotat of Ætolia. This crusade was a complete failure.

After the insignificant crusade of Andrew, king of Hungary (1217), John, king of Jerusalem, led his army against Egypt (a plan which was certainly calculated to assure the conquest of the Holy Land), and took Damietta. The sultan, Melek Kamel, fearing the consequences of a war, proposed peace and an exchange of Jerusalem for Damietta. The proud conqueror refused the offer, and proceeded without caution along the Nile towards Cairo. The sultan ordered the dikes of the Nile to be opened; the waters destroyed a large part of the Christian army, freed Damietta, and secured cessation from war for eight years, and the retreat of the relics of the Crusaders (1221).

Frederick II. of Hohenstauffen, the greatest of the German emperors, who excelled his contemporaries in wisdom, generosity, and manners, the husband of Yolanta the daughter of John of Jerusalem, had pledged himself at his coronation (1215) to a crusade. The affairs of the state, however, retarded for twelve years the fulfilment of his promises. At length, yielding to the pressing invitations of Pope Gregory IX., he sailed from Brindisi for Palestine. But after a few days' voyage, sickness compelled him to return to Otranto. This drew upon him the anger of the pontiff, who laid him under an interdict. Perhaps this was but a plausible pretext for humiliating the hated house of Hohenstauffen. Though under the pope's interdict, the emperor again appeared the next year in arms in the Holy Land, which gave the pope an opportunity of allowing his enemies *to invade the emperor's* Italian dominions. Even John of Jerusalem was faithless and audacious enough to occupy by force the kingdom of Naples.

The sultan, Melek Kamel, set no great value upon the possession of Jerusalem, and was willing to exchange it for an alliance with Frederick against his enemy the Sultan of Damascus. Frederick, pressed by his Italian affairs, profited by the good intentions of the sultan, and obtained from him the possession of the capital of Palestine. After putting upon his head the crown, he marched homewards with his army, and his approach to the Vatican was enough to determine the pope to take away the interdict.

Situation of the East after the Fifth Crusade.—The Khowarzm-shah Turks, pressed by the Mongols, who soon after put an end to the Caliphat, rushed into the Holy Land, and defeated near Gaza the whole of the Christian forces (1244). Jerusalem, together with Palestine, became a possession of the sultan of Egypt, as a member of their alliance.

Sixth Crusade.—Louis IX., king of France, called St. Louis, undertook in the year 1249 a new crusade. He followed the plan adopted by John of Jerusalem, and conducted his army against Egypt.

This land however seems to have offered few advantages to the Christian conquerors. Louis, after having easily obtained possession of Damietta, marched along the Nile towards Cairo, but, chiefly through the imprudence of his brother d'Artois, he lost the battle of Mansura, and with it the bulk of his army. D'Artois, and many of the bravest knights, were slain; hunger and sickness compelled the remainder to retreat. Before they were able to reach Damietta, they saw themselves overtaken and surrounded by the sultan, who made the king prisoner, together with the relics of his army. A truce was agreed on, in which the Christians were compelled to give up Damietta, and to pay a ransom of 800,000 Byzantine guilders. The Mamluks, a guard composed of Turkoman youth, who had gradually increased in power, dissatisfied with the generosity of the sultan towards the Christians, murdered him, and placed Ibek, their commander, upon the throne of the caliphs of Egypt.

Had Louis possessed fewer personal qualifications and less courage, he would never have obtained his liberty: yet these barbarians allowed him to depart, and there are some historians who pretend that if Louis had acted with more cunning, he could even have obtained from the Mamluks the object of his undertaking.

Though Louis, upon his return to France, found his kingdom in a disordered state, on account of the misery and waste caused by the revolutionary movements of bands of a fanatic peasantry called Pastorells, he could not give up the idea of reconquering Jerusalem, and a few years after his return he prepared a new crusade. This crusade however did not extend beyond Tunis, where Louis expected to make converts of the princes. This undertaking failed likewise; and Louis found his grave on the shores of Africa (1270).

Seventh Crusade.—England was the pioneer of the seventh and last crusade. While Louis was still in Tunis, Edward, the grandchild of Richard Cœur de Lion, prepared a new crusade. After the death of Louis he appeared before Tunis, but soon left Africa for Palestine to fight against the Saracens. Not being able to accomplish his plans he returned home, and was the last among the Christian princes who dreamed of conquering the Holy Land.

Situation of the East after the last Crusade.—A few towns situated on or near the coast, Antioch, Ptolemaïs, and Tripolis, were still in possession of the Christians, and were chiefly defended by the Templars and other military orders. The dispute about the kingdom of Jerusalem still continued between the descendants of the Baldwins. At length Ptolemaïs fell (1291); the other towns were either abandoned or taken; the knights fled to Europe, and the whole of Palestine and Syria again became a possession of the sultans of Egypt, and obeyed the laws of Mohammed. In short, the labour of two centuries was lost; and we may regard this epoch as a kind of oriental restoration.

Crusades in the Western Empire.—We have already observed how Emiko of Leiningen and the priest Gottschalk had persecuted the Jews in the Rhenish provinces in their expedition towards the East. This was called a crusade against the Jews. The banner of the cross was likewise displayed in the wars against the Moors in Spain, against the heathens in Prussia and Lithuania, against the

Waldenses and Albigenses in France, against all kinds of heretics, even against the house of Hohenstauffen when placed under the popish interdict; which wars, unjust in their principle, were rendered by fanaticism still more terrible in their consequences.

Object of the Eastern Crusades.—The object of the first crusades was to obtain possession of the Holy Sepulchre for the Christians in Europe; and secondly, to protect the Christians in the East against the persecutions of the Turks. The first object might perhaps have been obtained by treaties; the second, however, could not be secured as long as the Turks possessed Palestine; and hence the conquest of this country became the principal object of the Crusaders. This conquest might have been made in favour of the lawful lords of Palestine, the caliphs, but the Franks, misled by fanaticism, preferred to take for themselves that which by right belonged to others, and by a just retribution lost the fruits of two hundred years' struggle. On the other hand, if they had been guided by moderation, they might have easily obtained from the caliph Mostaali the possession of Jerusalem by treaties.

The object of the second crusade was from the very beginning inconsiderate. The possession of Jerusalem was not in danger; nothing had happened to cause a war except the taking of Edessa.

The third crusade was undertaken with the view of reconquering the Holy Land. This war may appear just to those who think that the acquisition by the sword and the possession of a few years make a good title; or even to those who, misled by diplomatic sophistry, fancy that crowns and men may be inherited like goods and chattels. The crusade of Count Baldwin was an infamous intrigue and mystification of the Doge Arrigo Dandolo: the crusade of the king of Jerusalem was an idle attempt to change his imaginary crown into a real one by taking the towns of Egypt; neither of these expeditions deserves the name of crusade, a name that might be given with more propriety to the fourth crusade undertaken by Andrew, king of Hungary.

The hatred of the pope against the house of Hohenstauffen was the cause of the fifth crusade. In spite of the impure motives of this war, however, the emperor, by his prudent conduct, succeeded in obtaining the possession of Jerusalem without the sacrifice of time or blood.

The sixth and seventh crusades were undertaken with the object of regaining possession of Palestine, which had been lost in the battle of Gaza. The chief reason why so many powerful expeditions turned out signal failures may be sought in the rivalry of the knights of the same country, and the jealousy of their respective kings; hence there was no unity of action, no discipline, no commander-in-chief, and their numerous armies were scattered and defeated like sheep without a shepherd.

Consequences of the Crusades.—Though the crusades sacrificed the lives of several millions of Christians, among whom were many women and children, and though they were one of the causes which contributed to give the popes such an overwhelming power in Europe, although they were instrumental in bringing about the religious wars or persecutions which afflicted Europe, and also in weakening the power of the eastern princes, and rendering them unable to withstand the attacks of the Mongols, it cannot be denied that the crusades were accompanied by many beneficial effects.

Such, for instance, were the increased activity of political life in Europe, the union of different nations in a common object, the consequent dissipation of international strifes and prejudices, and a tendency to a more humane reciprocal intercourse, the acquisition of scientific knowledge, improvement in manners and habits, the breaking up of the feudal system by the sale of estates to the merchants in exchange for the money required by the nobles for their military accoutrements and provisions, the increased wealth of the mercantile towns in Italy, which led to the revival of the fine arts and the sciences in that country, and finally, the diffusion of more liberal modes of thinking in matters of government and religion, occasioned by the intercourse of the western and eastern nations. The great influence of the crusades in extending commerce has been pointed out by Heeren in his 'Essay on the Influence of the Crusades.'

Before the crusades the heavy clouds of religious fanaticism hung over Europe, and mankind bore quietly the chains imposed upon their minds by the authority of the priesthood. But the knight and the soldier who returned from the crusades after having a thousand times experienced the generosity and hospitality of the Musselmans, brought home the singular tale that in those remote countries there existed a race of men noble-minded and kind, though professing a creed different from that of their invaders.

Blind submission to the authority of the priesthood was exchanged for meditation and independent reflection. The inquisition, which was instituted about this time, proves that there were men who were deemed fit subjects for an inquisition, that is, heretics and philosophers. One or two centuries after the crusades, Europe was filled with religious sceptics, as far as regarded the infallibility of the church, some of whom even dared to be religious reformers, such as Huss, Wickliffe, and others. At length Luther appeared, who by his theses and his translation of the Bible shook the very pillars of the Vatican.

Since the reformation of Luther, the Christian religion has been split into numerous sects, an event which some regard as injurious to religion. But as, in the chemical process of fermentation, in order to prepare a new and better product, it is necessary that the old matter be dissolved into minute particles (that the grape for instance be pounded and reduced to an unsightly juice, in order to make a pure and costly wine), so it is perhaps necessary that Christianity should be divided into many sects in order to clean it from all accidental impurities, and to make it fit to become the universal religion of mankind.

(Wilken, *Geschichte der Kreuzzüge*, Leipzig, 1807; Mailli, *Esprit des Croisades*, Paris, 1780; Voltaire, *Histoire des Croisades;* Michaud, *Histoire des Croisades;* Bongarii *Gesta Dei per Francos;* Robert Mons, *Historia Hierosolomitana;* Albertus Acquensis, *De Passagio Godoffredi de Bullion;* Mill's *History of the Crusades;* and lastly, Michaud, *Bibliographie des Croisades*, which gives an account of all the writers who have treated this subject.)

CRUSCA, ACCADE'MIA DELLA, a society of Italian philologists who compiled the great Dictionary of the Italian language, and who continue to discuss and decide upon questions concerning that language, its grammatical rules, and the choice, application, and etymology of its words. This academy, which is patronized by the Tuscan government, is generally looked upon by the Italians as the highest authority in matters of language. It was originally an offspring of the Accademia Fiorentina, several members of which, during the reign of the Grand Duke Cosmo I., with Leonardo Salviati at their head, left the parent assembly, and formed a distinct society for the object of producing specimens of pure Tuscan diction. Salviati himself set the example by publishing his 'Avvertimenti della Lingua sopra il Decamerone,' 2 vols. 4to., 1536. The great and laborious work of the new academy, which Salviati first promoted, but which was not completed till many years after his death, was the Dictionary which was published at Venice in 1612, at the expense of the academy, 'Vocabolario degli Accademici della Crusca.' It has since been enlarged and revised, and has gone through several editions, the last of which is that of Florence, 6 vols. fol., 1729—38, with another volume of Giunta, or additions, 1751. A reprint of this edition, with additions, was made by Pitteri in 5 vols. 4to., Venice, 1763, and another by Father Cesari, with more additions, in 6 vols. 4to., Verona, 1806. All the additions, however, contained in these two editions have not received the approbation of the academy. Since that time Monti has published his 'Proposta di alcune Correzioni ed Aggiunte al Vocabolario della Crusca,' 3 vols. 8vo., 1817—24. A long and very animated controversy was carried on for years between Monti, Perticari, and several of their friends in various parts of Italy, and the supporters of the authority of the Crusca academy in matters of language. In this dispute, as in all party disputes, exaggerations and paradoxes proceeded from the zealots of both parties, whilst the more sensible and discriminating men, on both sides, came much nearer to each other's conclusions than they themselves seemed aware of. There is a full though compendious exposition of the question at issue in No. X. of the *Journal of Education*, art. *On the Study of the Italian Language*, with a sequel in No. XII. of the same journal.

Academies, like la Crusca, the French academy, and the Academia Española, have no power to enforce their decrees, save that of public opinion, that is to say, the opinion of the majority of writers and readers. It is true that they may influence that majority so as to obtain a too servile obedience for a time, but the remedy is always in the power of spirited and well-informed writers, who may make really useful innovations and support them by proper arguments; and this is what has happened in Italy. There is no inquisition or temporal tribunal to prevent this. To complain therefore of the tyranny of La Crusca seems an absurdity. That society only states its collective opinion, which the learned of Italy may gainsay if they can find good reason for it. That society has rendered an essential service to the Italian language by fixing its rules and collecting its appropriate words from the best writers, a task which was perhaps beyond the power of any individual to undertake, or at least to accomplish with success. It has also published very correct editions of Dante, Boccaccio, and other Italian classics. Goldoni and others, in their personification of the academy, have represented him as a pedantic being, but many of the words and phrases which they have put into his mouth, are not such as are found in the works approved of by the academy. Ridicule is not always grounded on truth. In the earlier period of its institution, the Crusca, or at least some of its members, assumed too dogmatical a tone, which was in accordance with the taste and state of society in those times, especially in their strictures on the 'Gerusalemme Liberata.' [Tasso.] But those times are long gone by, and the academy now bears its honours with mild and becoming dignity. Several of the most learned men, not only of Tuscany but of other parts of Italy, are among its members.

The Academy della Crusca, having lost many of its most distinguished members, fell into comparative inertness and oblivion in the latter half of the last century, when, by a decree of the Grand Duke Leopold I., it was merged in the new Florentine Academy in 1783. The Magliabecchi Library was assigned for the sittings of the new society. In 1811 Napoleon restored the Crusca Academy to its separate existence, with 12 resident and 20 correspondent members. He founded also an annual prize of 500 Napoleons for the best written works in Italian prose or poetry, to be awarded by the decision of the academy. Micali's 'Storia d'Italia avanti il Dominio dei Romani' was one of the first which obtained the prize. When Tuscany returned under the sway of the Grand Duke Ferdinand, in 1814, he confirmed the institution of the academy and assured it of his patronage. The academy then began to publish its acts: 'Atti dell' Imperiale e Reale Accademia della Crusca,' of which several volumes have since appeared. The first volume, 1819, begins with a concise but interesting history of the academy from its first foundation. Its sittings take place in the palace Riccardi, formerly Medici, which was built by Cosmo the elder. Prizes are awarded by the academy every five years. The prize of 1830 was given to the historian Botta for his history of Italy during the French revolution and war.

The name Crusca means 'bran,' and the emblem of the academy is a 'frullone,' or sifting machine, with the legend: 'Il piú bel fior ne coglie: 'It gathers the finest part of the flour of the language.'

CRU'SIUS, CHRISTIAN AUGUST, a philosophical writer, who enjoyed a great but transient reputation in the beginning of the last century. He was born in 1712 at Leuna, in Merseburg, and died, in 1776, first professor of theology at Leipzig. His design was a reconciliation of philosophy with the orthodox theology. Considering the Wolfian philosophy the great enemy of religion, he made that the chief object of his attack. He was successful in exposing several of the dogmatical assertions of his opponents, particularly what are technically called the ontological and cosmological demonstrations of the being of a God. Unfortunately however he set up a system even more dogmatical than the one which he attempted to subvert, and he had the mortification to outlive the reputation which he had acquired.

CRUSTA'CEA, (Zoology), *Crustacés* of the French, *Krustenthiere* of the Germans, Μαλακόϛρακα (Malacostraca) of Aristotle and the ancient Greeks, a class of articulated animals, whose external covering is less solid than that of the majority of testaceous mollusks, but much firmer and harder than the skin of the naked mollusks, and whose conformation is essentially distinguishable from other classes, especially in the circulating, respiratory, and locomotive organs. *Types*, common crab [Crab] and common lobster [Astacus].

Skeleton.

As in many of the testaceous mollusks, the skeleton of the crustacea is external. It is made up of the tegumentary envelope, which, in some of the class, always continues soft, but in the greater portion is very firm, forming a shelly case or armour, in which all the soft parts are contained. In the more perfect crustaceans it is complex. The following description of its component parts is from the pen of M. Milne Edwards, who in his 'Histoire Naturelle des Crustacés' (Tome premier, Paris, 1834, 8vo.), and in the article Crustacea in the 'Cyclopædia of Anatomy and Physiology' (Vol. i., London, 1836), has given the latest and best information on a subject which would fill a volume, and of which our limits will only permit us to give a sketch. Taking the Brachyura, or short-tailed crustaceans, as his instance of the more highly developed forms of the class in which the complex structure is exhibited, he thus proceeds

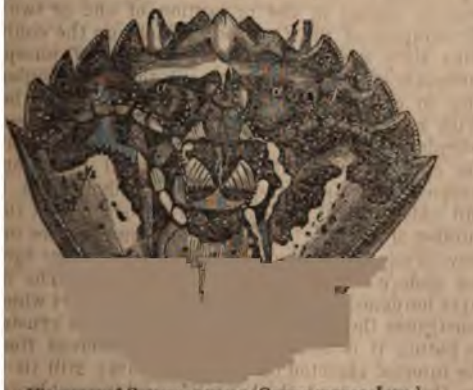
'The integument consists of a *corium* and an *epidermis*, with a pigmentary matter of a peculiar nature, destined to communicate to the latter membrane the various colours with which it is ornamented. The *corium* or *dermis*, as among the Vertebrata, is a thick, spongy, and very vascular membrane; on its inner surface, it is intimately connected with a kind of serous membrane, which lines the parietes of the cavities in the *Crustacea* in the same manner as the serous membranes line the internal cavities among the Vertebrata; these two membranes, divided in the latter order by the interposition of muscular and bony layers, which cover and protect the great cavities, become closely united when these layers disappear as they do in the *Crustacea*, in consequence of the important changes that take place in the conformation of the apparatus of locomotion. The *corium* again, among the *Crustacea*, is completely covered on its outer surface by a membranous envelope unfurnished with blood-vessels, and which must be held in all respects as analogous to the epidermis of the higher animals. It is never found in the properly membranous state, save at the time of the *Crustacea* casting their shell; at this period, it is interposed between the *corium* and the solid covering ready to be cast off, and has the appearance of a pretty dense and consistent membrane, in spite of its thinness. It forms, as among animals higher in the scale, a kind of inorganic lamina, applied to the surface of the corium, from which it is an exudation. After the fall of the old shell, it becomes thicker and very considerably firmer, owing to the deposition or penetration of calcareous molecules within its substance, as well as by the addition of new layers to its inner surface. The degree of hardness finally acquired, however, and the amount of calcareous matter deposited within it vary considerably; in many members of the class, it remains semicorneous, in a condition very similar to that of the integuments of insects, with which, moreover, it corresponds very closely in point of chemical composition; in the higher crustaceans again, its composition is very different: thus, whilst *Chitine* in combination with albumen is the principal element in the tegumentary skeleton of some species, this substance scarcely occurs in the proportion of one or two-tenths in the carapace of the *Decapods*, which, on the contrary, contains sixty and even eighty per cent. of phosphate and carbonate of lime, the latter substance particularly occurring in considerably larger proportion than the former. With regard to the *pigmentum*, it is less a membrane or reticulation than an amorphous matter diffused through the outermost layer of the superficial membrane, being secreted like this by the *corium*. Alcohol, æther, the acids, and water at 212° Fahr. change it to a red in the greater number of species; but there are some species in which it may be exposed to the action of these different agents without undergoing any perceptible change. The epidermic layer hardened in different degrees is the part which mainly constitutes the *tegumentary skeleton* of the crustacea. In its nature it is obviously altogether different from that of the internal skeleton of the Vertebrata; still its functions are the same, and this physiological resemblance has led naturalists to speak of these two pieces of organic mechanism, so dissimilar in their anatomical relations, under the ion name of *skeleton.* The tegumentary skeleton of Crustacea consists, like the bony skeleton of the brata, of a great number of distinct pieces connected ier by means of portions of the epidermic envelope, have not become hardened, in the same way as, g the higher animals, certain bones are connected by iges, the ossification of which is only accomplished reme old age.'

s *skeleton,* or crustaceous frame-work, consists of a of rings varying in number, the normal number of dy segments being twenty-one. Instances of a larger er are rare, and a less number seldom occurs; one or rings may be apparently absent, but in such cases vill generally be found consolidated as it were. In abryo the segments are developed in succession from backwards; the posterior rings, therefore, are gene-absent when the number is defective. Each ring is de into two arcs, one upper or dorsal, the other lower tral. Each arc may present as many as four elemen-ieces. Two of these united in the mesial line form rgum, the sides of this upper arc are framed of two portions denominated *flanks* or *epimeral pieces.* The arc is a counterpart of the upper. Two of the four into which it is divisible constitute the *sternum,* d in the mesial line, and are flanked by two *epister-* These two arcs do not cohere at their edges, but a s left for the insertion of the lateral appendages or *ities* which correspond with them. (Milne Edwards. iin.)

one-and-twenty rings above mentioned are gene-ivisible into three sections of seven each, and may be ered as corresponding with the three regions which sts have generally consented to recognize in the of the crustaceans, under the denominations of a *thorax,* and an *abdomen,* but the student should his guard against the false impressions which, as lne Edwards observes, are likely to arise from these by their leading the mind to liken them to the divisions in the Vertebrata, which are defined by the xpressions.

cephalo-thoracic portion and carapace first claim our on, and the latter acquires its greatest development Decapods. 'In these animals,' says M. Milne Ed-'the frame-work of the body does not appear at first consist of more than two portions, the one anterior, by the carapace, and representing the cephalic and segments conjoined; the other posterior, formed by lomen. In reality, the first fourteen rings of the e covered by this enormous buckler, and are so inti-conjoined as to have lost all their mobility; the of the thoracic segments thus hidden below the e are connected with it in their superior parts; they joined with one another underneath and laterally; ir tergal parts, having, in consequence of this, be-seless, are no longer to be found, being in some sort d by the great cephalic buckler; thus the whole of rings, in conformity with this arrangement, are ct and open above.'

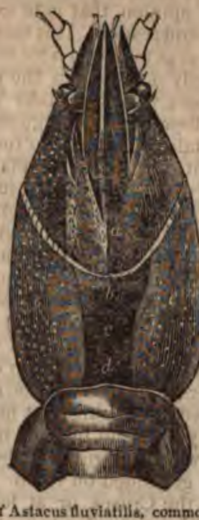
subjoined cut represents the carapace of a Brachyu-short-tailed crustacean, and the regions of which it osed, named after the viscera and organs protected n.



[Carapace of Carcinus mænas (Cancer mænas, Linn.]

egion of the stomach, or stomachic region; *b*, genital region; *c*, cor ur *d*, posterior hepatic region; *e*, *e*, branchial regions; *f*, *f* anter.or egions.

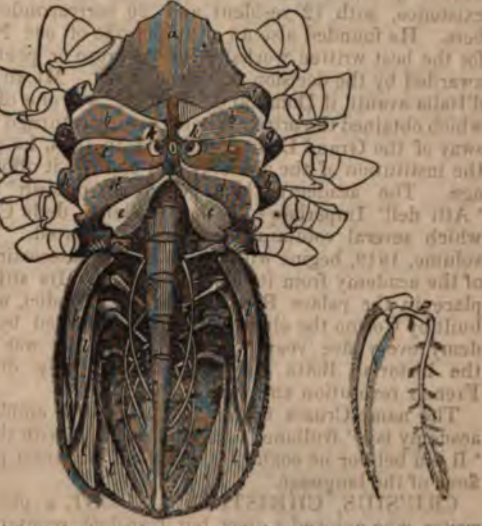
And the following represents the carapace of a Macrou rous or long-tailed Crustacean.



[Carapace of Astacus fluviatilis, common crawfish.]

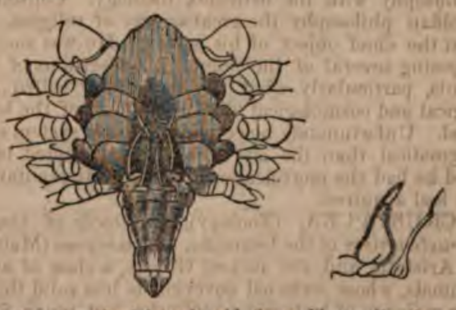
a, Stomachic region; *b* genital region; *c*, cordial region; *d*, posterior hepatic region; *e*, *e*, branchial regions.

The *abdomen* is most fully developed in the Macroura, or long-tailed Crustaceans, in many of which it becomes a very important organ of motion, and in them there is a comparatively small development of the carapace, while in the Brachyura, or short-tailed Crustaceans, this rule is reversed, the abdomen being comparatively small, and the great development taking place in the carapace, illustrating the 'loi de balancement organique' of M. Geoffroy St. Hilaire. The types above alluded to, the *common crab* and *common lobster,* afford striking examples of this law of organic equivalents.



[View of the underside of the female, with the tail or abdomen extended]

a, *b*, *c*, *d*, *e*. sternal pieces; *f*, *g*, *h*, *i*, latero-sternal pieces; *k*, *k*, external apertures of the female organs of generation; *l*, *l*, *l*, abdominal appendages or false feet. The detached figure represents one of these appendages removed from the abdomen.



[View of the under side of the male, with the exciting or directing organs. The detached figure represents one of these organs with the abdominal appendage or false foot beneath it].

In the subjoined cuts will be seen the relative proportions and positions of the sternum and abdomen in *Thelphusa fluviatilis*, one of the Brachyura; we have given the whole of the description now to prevent trouble and confusion to the reader, who will be able to refer to the figures when the organs represented are alluded to hereafter.

Having thus endeavoured to give an outline of the tegumentary skeleton of the body of this class, we must next draw the attention of the reader to a necessary consequence of the condition of the animal, inclosed as it is in most of the class in a hard shell. If the crustaceans were not gifted with a power of throwing off this hard shell or case, all growth would be stopped, excepting increase of thickness in the shell by a succession of secretions from below. To allow, therefore, room for the expansion and growth of the body and limbs, a provision for their increase is made by means of an

Ecdysis or *Moult*, which, as a general rule, is more frequent the younger the animal is, as indeed might be expected. Thus eight moults in the short space of seventeen days have been observed in a young *Daphnia* (BRANCHIOPODA, vol. v., p. 342, &c.) For the mode in which this liberation is performed in the Brachyurous Crustaceans the article CRAB (p. 126) may be consulted; and the common crawfish, *Astacus fluviatilis*, will serve as an example of the manner in which the *Macroura* cast their shell. We have indeed more than once heard strong suspicions expressed that, in the case of the crawfish particularly, no ecdysis takes place, and that the old shell is got rid of by absorption. By those who took this view of the subject it has been somewhat triumphantly asked, 'whoever found the cast-off shell of a crawfish?' and it was not an easy question to answer for those whose pursuits had not led them to the streams which the animals haunt; but they who have looked for the *exuviæ* at the proper time and place have seen them in abundance. The crawfish does throw off its old shell towards the end of summer or in the beginning of autumn*; and Reaumur saw it done.

The change is preceded by a few days of fasting and sickness, and at that time the carapace becomes loosened from the corium to which it was attached. The corium begins forthwith to secrete a new shell, which is at first soft and membranous, becomes gradually harder and harder, and is at last calcareous. When all connexion with the old shell is broken off, and the corium has completely secreted the new membranous envelope, the animal begins to set about freeing itself from the old incumbrance, and becomes very restless, the symptoms of inquietude increasing in proportion as the time for emancipation draws nigh. It rubs its legs one against the other, and finally throws itself on its back. In that situation it begins to shake itself and swell itself out, till it tears the membrane which connects the carapace with the abdomen, and begins to raise the former: then it rests a while. Alternations of agitation and rest succeed each other at intervals of longer or shorter duration, the carapace is completely raised, the head, the eyes, the antennæ, are extricated. The greatest difficulty occurs in freeing the extremities, nor could they be extricated at all did not the old covering split longitudinally: and indeed it frequently happens that the crawfish leaves a limb or two behind; and is sometimes so fettered, that it perishes from inability to extricate itself. The abdomen is the last division of the body freed, and the whole change generally takes place in half an hour. Four-and-twenty hours, or two or three days at furthest, are necessary for the conversion of the soft and membranous integument which sheathes the corium or naked body into a firm calcareous case similar to the last, and presenting the same appendages, even to the hairs, which last, observes M. Milne Edwards, are not contained within the old ones as Reaumur imagined, but exist ready-formed in the new envelope, turned in towards the interior like the fingers of a glove turned in upon itself.

M. Milne Edwards observes, that tne time occupied in the business of throwing off the shell varies considerably in different species, and that it also depends on atmospheric influences, and this observation applies equally to the number of days required for giving the new tegumentary sheath the consistency of the old shell; and he adds, that in the whole of the species which have been duly watched, especially those found on the French shores, the period which precedes and that which follows the ecdysis is a period of inquietude and disorder. The muscles are then flaccid, the flesh is soft and watery, and the animals are considered unwholesome and unfit for food. An exception to this remark occurs in the land-crabs (*Gecarcinus*), which, according to the testimony of all who have spoken and written on the subject, are never so delicious as during the season of change.

At the period of *ecdysis*, rounded, flattened calcareous concretions (carbonate of lime), commonly called *oculi cancrorum*, are formed at the sides of the stomach of the common *river crawfish*. (See Preparation 406 in the Museum of the College of Surgeons, and *Catal. of the Physiological Series*, vol. i., p. 406.*)

Every one has occasionally been struck with the difference of size in the members of crabs and lobsters. One claw of these, and other crustaceans which have the claws, when perfect, nearly equal, is often found of its full volume, while the other is comparatively diminutive; for the animal, upon the limb receiving any injury, has the power of suddenly throwing it off, and the effort does not appear to be attended with pain, though it is frequently made when the system receives a severe shock. (ASTACUS, vol. ii., p. 514.) The point at which the separation takes place is always in the second articulation, near the basis of the limb, and from the stump, which speedily cicatrizes, a new claw buds forth with all the proper articulations, and with an entire, though miniature, resemblance to the rejected member. This new claw increases slowly, and requires considerable time to attain the full size. It is generally stated, that if one of the limbs be severed in any other place than the usual point of separation the stump goes on bleeding, nor does it heal. In such cases the renovating process does not commence until the animal succeeds in separating the remains of the member at the proper point, and this it is supposed to do by a violent muscular contraction. Some time ago there were some land-crabs (Gecarcinus) at the garden of the Zoological Society, and the apparent ease with which they parted with their smaller legs in order to escape from any one who injudiciously took them up by those members was very remarkable. They did not seem to regard the loss at all, and ran away on the remainder of their legs as if nothing had happened. There was no opportunity of observing the mode of reproduction in this case, for the animals were brought to the garden from the West Indies late in the summer, and they did not survive the cold weather. We will now consider these and other

Organs of Locomotion.—Of the different writers who have treated this subject, the summary given by M. Milne Edwards appears to us to be the most instructive, and we therefore select it. It is clear and condensed, and we give it in his own words, for we know of no method equally concise of conveying adequate ideas of this curious piece of animal mechanism.

'The kind of solid sheath formed by the tegumentary skeleton of the crustacea, and which includes in its interior the whole of the viscera and other soft parts of these animals, is required to be so constructed as not to oppose locomotion; consequently there exist, either between the different rings of the body or the various constituent elements of the limbs, articulations destined to admit of motion to a greater or less extent between these different pieces. The structure of these articulations is of the most simple kind; the moveable piece rests upon that which precedes it by two hinge-like joints, situated at the two extremities of a line perpendicular to the plane in which the motion takes place. In the internal portion of the edge of the moveable piece comprised between the joints, there exists a notch of greater or less depth, destined to admit of flexion, whilst on the opposite or external side the same edge generally glides under that of the preceding piece. This kind of articulation, whilst it is the most favourable to precision of movement and to strength, has the disadvantage of admitting motion in one plane only; therefore the whole of the rings of the body, the axis of motion being entirely parallel, cannot move save in a vertical plane; but nature has introduced a kind of corrective of this disadvantage in the structure of the limbs, by changing the directions of the articular axes, whence ensues the possibility of general motions being performed in every direction. Between the two fixed points two opposed empty spaces are observed, left by the rings severally, and destined to admit of the occurrence of motions of flexion and extension. The tegumentary membrane which fills it never becomes encrusted or calcareous, but always continues soft and flexible.

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* The season of ecdysis in the crawfish seems to vary occasionally in different localities.

* There is a most interesting series of preparations in the Museum of the College of Surgeons, showing the process of moulting. See p. 198.

'The tegumentary skeleton supplies the apparatus of locomotion with fixed points of action as well as with the levers necessary to motion. The immediate or *active* organs of this apparatus are the muscles, the colour of which is white, and the structure of which presents no peculiarity worthy of notice. They are attached to the pieces which they are required to move either immediately or by the intermedium of horny or calcareous tendons, which are implanted upon the edge of the segment to which they belong. To the fixed point they are most commonly attached immediately. Their structure is simple, and each segment in fact, as has already been said, being contrived to move in one fixed and determinate plane, the muscles which communicate motion to it can constitute no more than two systems antagonists to each other, the one acting in the sense of *flexion*, by which the segment moved is approximated to that which precedes it, the other in the sense of *extension*, by which the segment is brought into the position most remote from the centre of motion. The muscles that produce these opposite effects, as might have been concluded, are found implanted into the opposite arms of the lever upon which their energy is extended.

'The motions in flexion tend universally to bring the extremities and the different rings towards the ventral aspect of the body; it is consequently upon this aspect that the flexor muscles are inserted, and these are in general the more powerful. On the contrary, and in accordance with the nature of the motion produced, it is upon the superior or dorsal aspect of the segments that the exterior muscles are attached. In the trench the two orders of muscles generally form two distinct layers, the one superficial, the other deep; the former thin and sometimes absent, the second, on the contrary, very powerful wherever powerful motions are required. The muscles generally extend from the arc above to the one immediately below, passing for the most part from the anterior edge of the upper to the anterior edge of the lower segment. The extent and the direction of the flexion of which any segment is susceptible depend on the size of the interannular spaces above or below the ginglymoid points, and as these spaces are in general of considerable magnitude on the ventral aspect, whilst the superior arcs are in contact, and can only ride one over another in a greater or less degree, it is only downwards that the body can be bent upon itself, while upwards, or in the sense of extension, it can hardly in general be brought into the horizontal line.

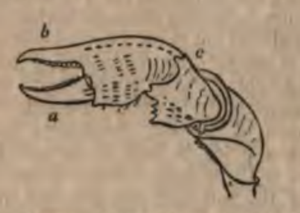
'Thus far what has been said applies more especially to the rings of the body, but the extremities present nothing that is essentially different, either as regards the mode in which the tubular segments are articulated to one another, or as regards the mode in which the muscles are inserted. Each of these indeed having but one kind of motion, and even that very limited in its extent, nature has aided the deficiency, as has been stated, by increasing the number of articulations, by which extent of motion is conferred, and in varying the direction of the articular axes, an arrangement by which the animal obtains the ability of moving in every direction, but at the expense of power, rapidity, and precision in its motions. Each segment of a limb incloses the muscles destined to move that segment which succeeds it, unless it be too short and weak for this end, in which case the muscles themselves have their origin at some point nearer to the medium plane of the body. As a general law the muscles are observed to be more powerful in proportion as they are nearer to the centre, which is to be explained by the fact, that each motion they then communicate is transmitted to a larger portion of a limb, to a lever longer in that sense in which it is disadvantageous to the power. Occasionally however the two last segments of a member are converted into a sort of hand, and in this case the penultimate segment sometimes includes a muscular mass, which may surpass in power the same system in the whole of the limb besides. Those muscles that put an extremity generally into motion are attached to the sides of the thoracic cavity, and the apodemata supply them with surfaces of insertion of great extent, and very favourably situated as regards their action. They occupy the double rank of cells formed by these laminæ, but they vary too much in their mode of arrangement to admit of our saying anything generally upon this head. The motion of translation or from place to place, the only kind upon which it seems necessary to say anything here, are effected in two modes, either by the alternate flexion and extension of the trunk, or by the play of the limbs.

'In those Crustacea which are formed essentially for swimming, the posterior part of the body is the principal agent in enabling the animal to change its place; but here the motions, instead of being lateral, are vertical; and instead of causing the creature to advance they cause it to recede: it is by bending the abdomen suddenly downwards, and bringing it immediately under the sternum, that it strikes the water, and consequently by darting backwards that the animal makes its way through the liquid. (ASTACUS, vol. ii., p. 513.) From what has now been said it may be imagined that the Crustacea whose conformation is the best adapted for swimming have the abdomen largely developed, and this is in fact what we always observe; the Amphipoda and Decapoda Macroura are examples; whilst in the walking Crustacea, such as the crabs, the Caprella, the Oniscus, &c., this portion of the body attains but very insignificant dimensions. In the swimming Crustacea, the appendages of the penultimate segment of the abdomen also become important organs of locomotion, inasmuch as they for the most part terminate in two broad horizontal plates, which, with the last segment, also become lamelliform, constitute an extensive caudal fin arranged in the manner of a fan. We have already said that the thoracic extremities alone constitute true ambulatory limbs. When destined for swimming only, their segments are lamelliform, and the palp, as well as the stem, contributes to form the kind of oar which each of them then constitutes.

'To conclude, the stemmatous portion of the thoracic extremities, whilst it still preserves the general form which we have assigned it, is modified in some cases to serve for walking as well as swimming, or to aid the animal as an instrument for burrowing with facility, and making a cavity for shelter among the sand. Thus in the Decapods that burrow, the last segment of the tarsus assumes a lanceolated form, and in the swimming Brachyura, the same segment, especially of the last pair of extremities (*Matuta*, for example), appears entirely lamellar.'

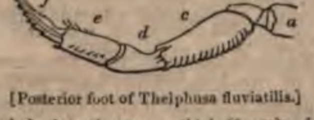
We have only further to add, that in a great number of species one or several pairs of the thoracic extremities are modified so as to become instruments of prehension; sometimes it is the last segment of the limb which, acquiring more than usual mobility, bends in such a manner as to form a hook with the preceding segment; sometimes it is this penultimate segment which extends below or by the side of the last, so as to form a kind of immoveable finger with which it is placed in opposition. In the first instance these instruments are denominated *subcheliform* claws, in the second *chelæ* simply, or *cheliform claws*.

Any one who will take the trouble of going over this excellent description with a common crab and lobster before him, will have a clear idea of the locomotive system in these animals.



[Claw (cheliform) of Thelphusa fluviatilis.]

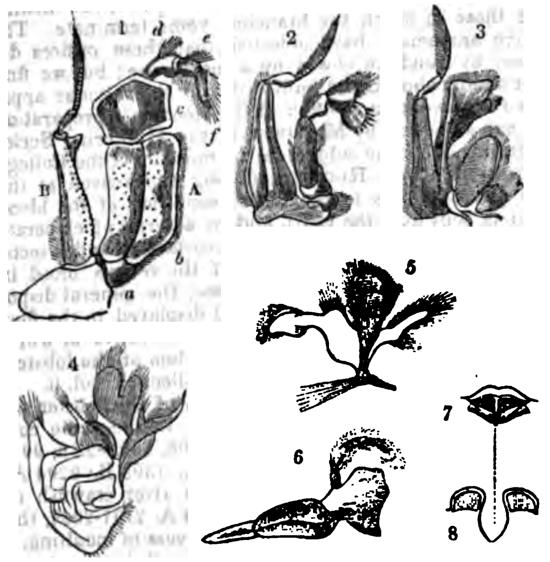
a, moveable finger; *b*, hand (manus) and immoveable finger; *c*, carpus, or wrist.



[Posterior foot of Thelphusa fluviatilis.]

a, Haunch (hanche); *b*, trochanter; *c*, thigh (femur); *d*, leg; *e*, metatarsus; *f*, tarsus, or nail.

Organs of Digestion.—The cheliform or subcheliform claws may be considered as ancillary to this important part of the organization of the Crustacea; and there are other parts, the details of which we proceed to give before we enter at large into this part of the subject.



[Jaw-feet (pieds machoires), &c. of Thelphusa fluviatilis.]

1, Right external jaw foot; A, its internal blade; *a, b, c, d, e, f*, its various articulations; B, its external blade, or flabelliform palp; 2, jaw of the fourth pair with its palp; 3, jaw of the third pair with its palp; 4, jaw of the second pair; 5, jaw of the first pair; 6, mandible with its palp; 7, upper lip; 8, tongue (langue) or lower lip.

The maxillary limbs above represented, which constitute the jaws in the *masticating crustaceans*, reach in them their highest development; whilst in the *sucking crustaceans*, which are parasites, and feed on the juices of other animals, a great difference of structure is, as might be expected, observable, certain parts of the apparatus being elongated into a proboscis or tube of longer or shorter dimensions adapted for sucking, and in the interior of which are two slender pointed processes that act as lancets, for the purpose of perforation, in lieu of the true mandibles.

The basilar articulations of the anterior thoracic extremities in many species are employed to seize, hold fast, and in a considerable degree comminute, the food; and the most perfect development of this design is manifested in the cheliform claws of the lobsters and crabs, with all their admirable modifications for powerful prehension.

The *mouth* is a mere opening of the short œsophagus; nor is it furnished with a tongue—the organ so named (*langue* and *languette*) is no more than a horny and lamellar process, performing in a degree the functions of a lower lip. The *œsophagus*, which terminates without any interruption in the stomach, and both parts, with one striking exception in the case of the latter, which we shall presently mention, present nothing remarkable, consisting as well as the whole of the intestinal canal of two membranous layers, and presenting a considerable resemblance to the same part of the organization of the higher animals. The *stomach* is globular and capacious, occupying much of the area of the cephalic cavity, and consisting of two distinct portions: 1. The cardiac region, surmounting the mouth and œsophagus; 2, The pyloric, placed behind the cardiac region.

Around the *pylorus* is situated that extraordinary apparatus of hard tubercles or sharp teeth, which operate as grinding or tearing organs on the food submitted to the action of this animal mill; and though the different pieces vary considerably in different species, their greater or less development depending upon the nature of the food taken by those species, they may be traced in all the *Brachyura* and *Macroura*. In *Squilla* this masticatory framework is reduced to two half-horny pieces, with rounded projections; and to make up for this deficiency, a branch of each mandible reaches down to the pyloric orifice.

From the *pylorus*, the *intestine* proceeds direct to the vent, there being no convolution; but in the higher crustaceans, it is distinguishable into two portions to which the names of *duodenum* and *rectum* have been applied, and which are sometimes, in the lobster for instance, separated by a valve, but more frequently are without defined limits. In the lower crustaceans the intestine is cylindrical, and offers no difference throughout its whole length from the stomach to the *vent*, which is always situated in the last ring, and has its orifice closed by muscular fibres which perform the functions of a sphincter.

The *liver* is largely developed in many of the Crustacea, especially in the Decapods; indeed, no one can eat a crab or a lobster without being struck with the large proportions of this viscus, which in those species is considered so delicious. In the Edriophthalmians, on the contrary, it is almost rudimentary, there being in them only three pairs of biliary vessels, much resembling those of insects. The organ, when well developed, consists of two symmetrical portions, generally separated from each other, and composed of a collection of cæcums, which at one of their extremities discharge their secretion into excretory ducts, which being converted by their union into longer and larger vessels, pour the bile ultimately through a double channel into the pylorus. The nature of the whitish fluid secreted by the two, and, as it is said, in some cases three, elongated blind tubular worm-like organs, the first two situated on each side of the pylorus, and the third on the middle of the intestine a short way below them, is not known, nor is its use.

The two green glandular organs placed on each side of the œsophagus are supposed to act in some degree as substitutes for *salivary glands*.

In the Museum of the Royal College of Surgeons, in London, are preparations of the stomachs of the river crawfish, the lobster, and of a large crab, Nos. 406 to 408, both inclusive.

Circulating System.—No chyliferous system, or, to speak more correctly, no system of chyliferous vessels, has yet been found in the Crustacea; and the best received supposition is, that the nutritious fluid is transferred from the intestine to the blood-vessels by imbibition. The *blood* is either without colour or of a slightly bluish tinge; very coagulable, and abounding in globules held in suspension.

Much has been written on the subject of the vascular system, one of great complexity, through which this fluid circulates; but notwithstanding the valuable labours of Willis, Swammerdam, Cuvier, and others, great difference of opinion and obscurity prevailed, till the researches of Lund, and especially those of MM. Audouin and Milne Edwards, intituled, 'Recherches Anatomiques et Physiologiques sur la Circulation dans les Crustacés' (*Ann. des Sc. Nat.*, t. ii.), appeared. The following are the conclusions to which the latter distinguished naturalists came, after a careful study, as well of the anatomical disposition of the circulating apparatus of the Crustacea, as of the progress of the blood through its interior.

'The circulation of the blood in these animals is accomplished in a manner very similar to what takes place in the Mollusca. The blood, pushed forward by the heart, is distributed to every part of the body, from whence it is returned into large sinuses situated at no great distance from the base of the branchiæ; from these sinuses it is sent on to the respiratory apparatus, which it traverses, and from which it finds its way to the heart, to recommence the same circle anew. The *heart* is consequently *aortic* and *single*. The heart is always found in the median line of the body, and lying over the alimentary canal, near the dorsal aspect. Its form is various; in the Decapods it is nearly square, and lies in the middle and superior part of the thorax, being separated from the carapace by tegumentary membranes only, and may be seen in the space included between the two vaults of the flanks. In structure it appears to be composed by the interlacement of numerous muscular fibres, fixed by their extremities to neighbouring parts, and passing to some distance over the aggregate at either end, so that the whole organ brings to mind such a figure as would be formed by the superposition of a number of stars the rays of which do not correspond. In the other orders this general form of the heart varies considerably from the figure of an oblong square of rather inconsiderable size, as it occurs in the Decapoda, to that of a long cylindrical vessel extending through the whole length of the body, as it appears in the Stomapoda and the Edriophthalmians. In the former of these it gives origin to six vascular trunks, three of which issue from the anterior edge, and three from the posterior surface; each of the six openings is closed by a valvular apparatus, which prevents the regurgitation of the blood.

'The first of the three anterior vessels is situated in the median line, and is distributed to the eyes, in consequence of which we have entitled it the ophthalmic artery. Lodged within the substance of the general tegumentary membrane, it continues its course without undergoing any subdivision along the median line through the whole length of the thorax, until, arrived opposite the eyes, it subdivides and terminates in two branches, which penetrate the ocular peduncles. On the two sides are the two antennary arteries. They run obliquely towards the antennæ, sending off numerous branches to the tegumentary membrane, in which they are at first lodged; they then plunge more deeply, sending branches to the stomach and its muscles and to the organs of generation, between which they insinuate themselves by following the folds of the same membrane which parts them. Lastly, each of these vessels sub-divides into two branches, one of which proceeds to the internal and the other to the external antenna.

‘Two hepatic arteries arise from the fore part of the inferior surface of the heart, and penetrate the liver, there to be ramified; but they are only found double and distinct from one another so long as the liver is met with divided into two lobes, as it is in the crawfish and lobster.

‘From the posterior part of the same surface of the heart there proceeds a large trunk, which, from its importance, might be compared with the aorta. This is unquestionably the vessel which many authors have spoken of as a great vena cava; we have entitled it the *sternal* artery. It bends forwards, giving origin to two abdominal arteries, dips into the sternal canal, distributing branches to the different thoracic rings, as also to the five first cephalic rings, which it passes over in its course. Meeting with the œsophagus, it bifurcates, but still sends branches to the mandibles and the whole of the anterior and inferior parts of the head.

‘The bulb presented by the sternal artery at its origin, in the Macroura, is the part which Willis characterized as *auricle* of the heart. As concerns the two abdominal arteries, which may be distinguished into *superior* and *inferior*, and which arise from the kind of cross which it forms almost immediately after its exit, they are in precise relationship in point of size with the magnitude and importance of the abdomen itself. In the Brachyura they are mere slender twigs; in the Macroura, on the contrary, they are capacious stems, and the inferior of the two sends branches to the two posterior pairs of thoracic extremities.

‘The disposition of the three first vessels is the same in the Stomapoda as in the preceding species; but the great vessel which represents the heart being extended through the whole length of the body, supplies immediately other arterial branches in pairs, and in number equal to those of the rings.

‘The blood returns from the different parts of the body by *canals*, or rather *vacuities*, among the tissues (for they have no very evident appropriate parietes), which terminate in the *venous sinuses* situated close to the branchiæ.

‘In the short-tailed Decapoda we find no more than a double series of these sinuses included within the cells of the planes above the articulation of the extremities. They communicate with one another, and they appear to have no parietes other than laminæ of cellular membrane, of extreme tenuity, which cover the neighbouring parts. Each of them, nevertheless, receives several venous conduits, and gives origin at its superior and external part to a vessel, which, traversing the walls of the planes at the base of the branchiæ, conducts the blood to the latter organs. This is the external or afferent vessel of the branchiæ.

‘We find the same lateral venous sinuses in the Macroura; but instead of communicating with one another athwart the thoracic septa, as is the case in the Brachyura, they all empty themselves into a great median vessel, which is itself a venous sinus, and occupies the sternal canal. In the Squilla this sinus is almost the only vessel which serves as a reservoir to the venous blood.

‘The blood, after being arterialized in its passage through the capillaries of the branchiæ, is poured into the *efferent vessel* which runs along the internal surface of each branchia. It enters the thoracic cells in the same manner as the afferent vessel passed out from them, bends upwardly under the vault of the flanks, and thus takes its course towards the heart. It is to this portion of the canal that we have given the name of *branchiocardiac vessel.*’

The anatomical accuracy of the above description is generally admitted, but the physiological deductions of M. Lund differ from those of MM. Audouin and Milne Edwards. He regards the heart as destined to propel, not only the pure blood from the gills, but also an admixture of venous blood which enters the cavity of the heart by four orifices, seated on its dorso-lateral aspects, and distinct from those in which the branchial veins terminate. The French anatomists have objected, that these orifices described by Lund are closed by a membrane; but we find them plainly shown, and provided with the valvular apparatus for preventing a reflux of the blood, in a preparation (No. 898 a.) added by Mr. Owen to the Hunterian Series illustrating the same subject in the museum of the College of Surgeons. John Hunter had long ago arrived at the same conclusions as to the mixed condition of the blood which is sent from the heart, and in a series of elaborate researches on the circulation in the crustaceans and insects, first discovered the diffused state of the venous blood in extensive and irregular venous sinuses; the general disposition of which, in the lobster, is well displayed in the four beautiful plates (15, 16, 17, and 18) illustrative of John Hunter's account of the circulating system of the lobster, in the Catalogue of the Physiological Collection, vol. ii.

This and other parts of the anatomy of the lobster are illustrated in the following preparations in the same collection:—Nos. 22, 60, 110, 223, 407, 408, 880, 898 a, 991, 992, 1301, 1302, 1302 A, 1303, 1303 A, 1303 B, 2204 A, 2205-2207 A; and the anatomy of the river crawfish in the preparations numbered 406, 993, 993 A, 2191-2204, the latter series being explanatory of the process of moulting.

Respiratory System.—The respiration of the crustacea is carried on generally by means of branchiæ. We say generally, because there are some forms where no special organs have been detected, and where it is presumed that oxygen is obtained from the water through the medium of the external integument. But where, as in the great mass of these animals, branchial respiration is present, the variety in form and disposition of the apparatus, and in some cases the complexity of it, are very great. Thus, in the Branchiopoda the lamellar form of all the thoracic extremities and the two external appendages corresponding to the palp and flabellum present membranous vesicles, flat in shape, highly vascular and soft, whose office it is to facilitate the action of the air upon the blood. In the *Amphipoda* and *Læmodipoda* we begin to perceive a gradual departure from this type. In the *Læmodipoda* the vesicular bodies produced by the flabelliform appendage of a certain number of pairs of the thoracic extremities, only perform the functions of branchiæ; and in the Isopoda the locomotive extremities cease to act as respiratory organs, the five first pairs of abdominal extremities being exclusively devoted to those duties. The *Stomapoda*, which in some cases are without determinate respiratory organs, in others present an organization analogous to that of the decapodous embryo, and again in the *Squillæ* and *Thysanopoda* exhibit a highly-complicated structure of branchiæ, which, though superior even to the highest type in complexity, still fall short of the perfection manifested in that type, inasmuch as the branchiæ float in the water unprotected by any envelope.

M. Milne Edwards thus reviews the respiratory apparatus in its state of greatest complexity, commencing with it in the embryo, and following it in its progressive development.

‘In the earliest periods of embryotic life of the common *Astacus fluviatilis*, we discover no trace of branchiæ; but at a somewhat more advanced stage of the incubation, though still before the formation of the heart, these organs begin to appear. They are at first small lamellar appendices of extreme simplicity, attached above the three pairs of maxillary extremities, and representing the flabelliform portions of these limbs. Soon these lamellar appendages elongate and divide into two halves, one internal, lamellar, and triangular, the other external, small, and cylindrical; lastly, upon the surface of this, striæ are observed to appear, which are the rudiments of the branchial filaments. During this interval the thoracic extremities have become developed, and above their bases other branchiæ have made their appearance, presenting in the beginning the form of tubercles, and subsequently that of stilets, smooth and rounded on their surface, but by-and-by becoming covered with a multitude of small tuberculations, which, by their elongation, are gradually converted into branchial filaments similar to the preceding. During this period of the development of the branchiæ, these organs are applied, like the extremities, to the inferior surface of the embryo; but they subsequently rise against the lateral parts of the thorax, become lodged within a cavity situated under the carapace, and thus are no longer visible externally.

‘The cavity destined to protect in this manner the branchial apparatus is neither more nor less than an internal fold of the common tegumentary membrane. It shows itself first under the guise of a narrow groove or furrow, which runs along the lateral parts of the thorax, below the edge of the lateral piece of the carapace. This longitudinal furrow is not long of expanding, and becomes consolidated by its superior edge with the internal surface of the carapace, which, by being prolonged inferiorly, constitutes the external wall of a cavity, the opening of which, situated above the base of the extremities, becomes more and more contracted, and ends by being almost entirely closed. The space in this way circumscribed incloses the branchiæ, and constitutes what is called the respiratory cavity of the Decapod Crustaceans.

'From what has just been said, it would appear that the embryo of *Astacus fluviatilis* presents four principal periods with reference to the state of the respiratory apparatus: 1. that which precedes the appearance of this apparatus; 2. that during which the branchiæ are not distinguishable from the flabelliform appendages of the extremities, or in which it consists of simple lamellar or styliform processes, which appear as mere processes of other organs especially dedicated to locomotion or mastication; 3. that characterized by the transformation of these extremely simple appendages into organs of a complex structure, entirely distinct from the extremities, but still entirely external; 4. and lastly, that during which the branchiæ sink inwards, and become lodged in a cavity especially adapted for their reception, and provided with a particular apparatus destined to renew the water necessary to the maintenance of respiration.

'If we now turn to the examination of the apparatus of respiration in the different groups in which it exhibits important modifications, we shall, in the series of Crustaceans, encounter permanent states analogous to the various phases through which we have just seen the apparatus passing in the most elevated animals of the class. And, in fact, the first period which we have particularized above in the embryonic life of the Decapod is exhibited in the permanent condition of some inferior crustaceans, in which not only are there no special organs for respiration, but in which none of the appendices occur with such modifications of structure as would fit them to become substitutes for the branchiæ, in which, consequently, the process of respiration, that is the aeration of the blood, appears to take place over the surface of the body at large. The greater number of the Haustellate Crustacea, of the Entomostraca properly so called, of the Copepoda, and even of the Phyllosomata, appear to belong to this type of organization.'

The branchial character is so inherent in this class, that it is preserved even in certain species that live on the land. The land-crab (*Gecarcinus*), for example, would die if long immersed in water; but this, as well as other land crustaceans, requires a certain degree of moisture to enable the branchiæ to act, and accordingly they never remove far from damp situations.

Nervous System and Senses.—The obscurity in which this part of the subject was involved has been greatly dissipated by the light thrown on it by many authors, among whom Cuvier, Rathke, MM. Audouin and Milne Edwards, and Mr. Newport stand pre-eminent.

The principles derived from the study of the gradual evolution of the nervous system in the common crawfish are, 1. the isolated formation of the nervous centres, independently of one another. The ulterior junction of the organs constitutes the law of centripetal development of M. Serres. 2. A tendency to conjunction by a motion transversely. 3. A second motion in the line of the axis of the body, producing a final concentration of a greater or less number of nervous centres, originally independent of each other.

The first of these conditions is well seen in *Talitrus*. On each side of the mesial line in this genus is a chain of ganglions, conjoined by nervous centres of simple construction, flattened, and somewhat lozenge-like in their outline. Thirteen pairs of these correspond to the thirteen segments of the body, the two nuclei of each pair communicating together in the same way that each pair is connected with its antecedent and succeeding pair, by means of medullary cords in the first case, and longitudinal cords in the second. Each of these pairs in all essentials is a counterpart of the other, the cephalic ganglion, which sends branches to the antennæ and eyes, not excepted. In *Phyllosoma* the tendency to centralization is more obvious, and in *Cymothoë* the union of the medullary nuclei is accomplished, the approximated chains forming a single longitudinal series from head to tail.

In the types, as might be expected, the centralizing system is perfected by the actual conjunction of the nuclei; and here we must refer the student to the works above mentioned, more especially to those of Rathke, of Audouin, and Milne Edwards, and of Mr. Newport, and the beautiful preparations illustrative of this part of the organization of the crustaceans in the museum of the Royal College of Surgeons in London (Gallery, Nos. 1301 to 1303 B, both inclusive). We would particularly draw his attention to No. 1302 A, presented by Mr. Newport, 'showing the anterior and posterior, or motor and sensitive tracts, which constitute the cerebral or spinal column,' &c.; and to No. 1303 A, exhibiting the nervous system of *Scyllarus antarcticus*, and 1303 B, laying open that of *Pagurus pedunculatus*, both prepared by Mr. Owen. Mr. Newport's excellent and instructive paper 'On the nervous system of the *Sphinx ligustri* of Linnæus' (*Phil. Trans.*, part ii., 1834), including beautiful illustrations of the nervous system of the lobster, and showing its identity in principle with that of the Sphinx, should be carefully studied.

The conclusion formed by M. Milne Edwards in his Histoire is that 'the nervous system of the crustacea consists uniformly of medullary nuclei (ganglions), the normal number of which is the same as that of the members or rings of the body, and that all the modifications encountered, whether at different periods of the incubation, or in different species of the series, depend especially on the approximation, more or less complete, of these nuclei (an approximation which takes place from the sides towards the median line, as well as in the longitudinal direction), and to an arrest of development occurring in a variable number of the nuclei.'

Mr. Newport appears to have been the first who pointed out the double ganglionic chain in the *Lobster*, as being composed of two orders of fibres, forming distinct and superposed fasciculi or columns, designated by him columns of sensation and of motion.

The highest degree of nervous centralization is found in *Maia*, according to M. Milne Edwards, who lays down the following principles, the result of the experiments made by himself and M. Audouin, and his deep and elaborate investigation of the subject.

'1. The nervous system is the system which entirely presides over the sensations and motions.

'2. The nervous cords are merely the organs of transmission of the sensations and of volition, and it is in the ganglions that the power of perceiving the former and of producing the latter resides. Every organ separated from its nervous centre speedily loses all motion and sensation.

'3. The whole of the ganglions have analogous properties; the faculty of determining motions and receiving sensations exists in each of these organs; and the action of each is by so much the more independent as its development is more isolated. When the ganglionic chain is nearly uniform through its whole length, it may be divided without the action of the apparatus being destroyed in either portion thus isolated,—always understood, that both are of considerable size, because, when a very small portion only is isolated from the rest of the system, this appears too weak, as it were, to continue its functions, so that sensibility and contractility are alike speedily lost. But where one portion of the ganglionic chain has attained a development very superior to that of the rest, its action becomes essential to the integrity of the functions of the whole.

'It must not be imagined, however, from this that sensibility and the faculty of exciting muscular contractions are ever completely concentrated in the cephalic ganglions, and it seems to us calculated to convey a very inaccurate idea of the nature and functions of these ganglions to speak of them under the name of *brain*, as the generality of writers have been led to do, seduced by certain inconclusive analogies in point of form and position.

'It is nevertheless to be remarked that in these animals an obscure tendency to the centralization of the nervous functions is observable in the anterior portion of the ganglionic chain; because, if, in the lobster, for instance, it be divided into two portions, as nearly equal as possible, by severing the cords of communication between the ganglions belonging to the first and second thoracic rings, sensibility, and especially mobility, are much more quickly ost in the posterior than in the anterior half, and this disproportion is by so much the more manifest as the division is performed more posteriorly; still there is a great interval between this first indication and the concentration of the faculties of perception and of will in a single organ—the brain, of which every other portion of the nervous system then becomes a mere dependency.' (*Cyclo. of Anat. and Phys.*)

Sight.—This sense is possessed by the whole of the class at some period of their lives, and in the great majority the organ is of a highly complicated structure. The parasitic crustacea, which undergo a kind of metamorphosis, possess eyes in the early stage of their existence, though they are subsequently obliterated; but the great mass of crustaceans are gifted with the power of distinguishing objects through the medium of light from their birth to their death. We will now examine the different forms presented by the visual apparatus.

Smooth or *simple Eyes.*—These consist of a smooth rounded transparent cornea, being a modification of the tegumentary membrane, immediately behind which, and in contact with it is the *crystalline lens*, generally spherical, and behind this last and in contact with it is a mass of gelatine, which performs the function of the *vitreous humour*, and touches the extremity of the optic nerve. A thick deep-coloured pigment envelops the whole and lines the inner surface of the eye-globe up to the point at which the transparency of the cornea begins. *Limulus* (Molucca crab, king crab) affords an example of this kind of eye. The simple eyes have never been found to exceed two or three in number.

Intermediate Eyes.—*Nebalia*, *Branchipus* and *Daphnia* present us with the *first modification* of a visual structure intermediate as it were between the *simple* and the *compound* eyes. In this organization the cornea is still undivided externally, but a number of small crystalline lenses and vitreous humours, each in its separate pigmentary sac and terminating in immediate contact with the optic nerve, present an eye consisting of a conjunction of several stemmata or simple eyes under a common cornea—*Apus* [BINOCULUS], besides its pair of simple eyes, has also a posterior compound pair. The *second modification*, which is to be found in the Edriophthalmians (*Amphithöe*, for instance), brings us still nearer to the truly compound form with distinct facets. Two transparent laminæ form the *cornea* in these crustaceans: the external is smooth and undivided, the internal divided into a variable number of hexagonal facets, each with a distinct cornea which are superposed upon the conical crystalline lens, which is an ingredient in *compound eyes* properly so called.

Compound Eyes.—The external and internal membranes, the junction of which forms the *cornea*, present simultaneously the division into facets, each of which forms anteriorly an ocular compartment. Unlike the facets in the eyes of insects which are always hexagonal, these present various figures in different crustacea. In *Scyllarus*, *Galathea*, the common crawfish, &c., for example, they are square: in *Pagurus*, *Squilla*, the crabs, &c., they are hexagons. The crystalline humour that succeeds them immediately, is, according to M. Milne Edwards, 'of a conical form, and is followed by a vitreous humour having the appearance of a gelatinous filament, adhering by its base to the optic nerve.' Each of the columns thus formed is, moreover, lodged within a pigmentary cell, which likewise covers the bulb of the optic nerve. 'But the most remarkable circumstance is, that the large cavity within which the whole of these parallel columns, every one of which is in itself a perfect eye, are contained, is closed posteriorly by a membrane, which appears to be neither more nor less than the middle tegumentary membrane pierced for the passage of the optic nerve, so that the ocular chamber at large results from the separation at a point of the two external layers of the general envelope.' * * * 'The most remarkable modification of facetted eyes consists in the presence of a kind of supplementary lens, of a circular shape, and set within the cornea in front of each proper crystalline lens. These small lenticular bodies exist independently, and are perfectly distinct from the small corneal facets. In some cases they might be mistaken, (in the *Idoteæ* for example, where they may be perceived singly, and with their distinct circular forms,) and the incautious observer led to conclude that the corneal facets are merely these lenticular bodies so much enlarged that their hexagonal or square forms result from their agglomeration in a point; but there are crustacea, such as the *Callianassæ*, in which these two elements of the external cornea may be perfectly distinguished, the lenticular body being of insignificant dimensions, and occupying the centre of the corneal facet only. In general, however, the diameter of the lenticular body is equal to that of the corneal facet itself, so that their edges blend. Further, the lenticular bodies are most commonly evolved in the substance of the cornea; but there are cases in which, under favourable circumstances, they may be detached from it. Although the existence of these different modifications must not be considered as being exclusive, inasmuch as there are certain crustacea which exhibit more than one of them at the same time, for instance, *stemmata* and *compound eyes*, the latter only are the species of visual organ encountered in the great majority of cases. Their general number is two; but these are occasionally united, so as to form a single mass, and make the animal appear, at first sight, as if it had but a single eye. This peculiarity of organization can even be followed in the *Daphniæ* [BRANCHIOPODA], in the embryo of which the eyes are first seen isolated; with the progress of the development, however, they are observed gradually to approach each other, and finally to become united. *Stemmata* are always immoveable and sessile; the *compound eyes* with *smooth corneæ*, however, although in the majority of cases they present the same disposition, now and then occur moveable: sometimes they are supported by a pedicle, moveable in like manner and provided with special muscles. The eyes with facets present the same modifications, and even supply important characters in classifying these animals: thus in the *Edriophthalmia* the eyes are always immoveable and sessile, whilst in the *Decapoda* and *Stomapoda* they are supported upon moveable stems of very various lengths, and which every consideration leads us to view as limbs or appendages of the first cephalic ring. It sometimes even happens that in these animals, between the outer edge of the carapace and the base of the antennæ, there occurs a furrow or cavity, within which the eyes may be withdrawn or laid flat, so as to be out of the way of injury; this groove or cavity is generally spoken of under the name of the orbit.' (*Cyclo. of Anat. and Phys.*)

In some of the forms (*Maia* for instance) there is a fringe of hairs on the inner side of the orbit, so placed as to perform the office of a brush in wiping the eye when brought into contact with it.

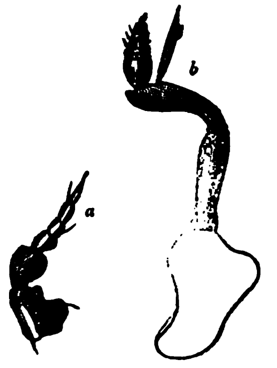
Hearing.—A cavity full of fluid, supplied with a nerve fitted for the perception of impulses of sound, forms the basis of the auditory system in the crustacea. This apparatus is assisted by certain organs, elastic membranes, and rigid stems for instance, organized so as to vibrate under the action of sonorous undulations, or to assist such vibration. The long rigid stem formed by the antennæ of the second pair assists in this function, and, according to the highly interesting experiments of M. Savart, the addition of such a rigid stem renders certain vibrations appreciable, which, without such a conductor, would be imperceptible. In many of the forms (*Maia* for instance) there is an *ossiculum auditus*.

In the museum of the College of Surgeons (Gallery, No. 1559 A) is a Hermit Crab (*Pagurus Miles*, Oliv.), prepared by Mr. Owen to show the organ of hearing, which is composed of a simple vestibular cavity situated at the under part of the basal joint of the external antennæ. The cavity is surrounded by a dense crustaceous substance, except at the internal opening, where the auditory filament of the antennal nerve penetrates it, and at the opposite side, where an elliptical opening or fenestra is left, which is closed by the acoustic membrane: the membranes of sound affect this membrane, and are transmitted to the nerve, which is exposed on the left side. (Owen., *Cat. of Physiolog.*, series., vol. iii., part 1).

Smell.—Every lobster-pot that is baited on our coasts affords evidence that the Crustaceans are endued with the sense of smelling, but where the organ is seated is doubtful. M. de Blainville placed it in the antennæ, where it certainly does not reside, according to M. Milne Edwards, who further states that the opinion of M. Rosenthal, who ascribes the function to a cavity which he discovered at the base of the first pair of antennæ, requires to be supported by direct experiment.

Taste.—Though the crustacea have no true tongue, their selection of food and the preference exercised by them, show that they are gifted with the sense of taste or a sense analogous to it. The seat of the faculty is most probably that portion of the tegumentary membrane that lines the inside of the mouth and œsophagus.

Touch.—The crust more or less calcarious with which the crustacea are covered forms a medium not calculated to convey external impressions of any delicacy. 'Nevertheless,' says M. Milne Edwards, 'in front of the head there are certain special organs which all the observations I have had an opportunity of making upon the organization of these animals lead me to regard as parts more particularly destined to be the seat of the sense of touch. These organs are the antennæ—those slender filaments possessed of a great degree of flexibility, of motility, and of sensibility. M. de Blainville was led to regard these organs as the seat of the sense of smell: but direct and conclusive experiment has satisfied us that the destruction of the antennæ has no influence whatever on the exercise of the sense of smell: and we are, on the same grounds, induced to believe them destined to the exercise of the sense of touch of considerable delicacy, unless we would imagine them as the instruments of some quite peculiar sense, the existence of which would be purely hypothetical. The number and disposition of these organs varies extremely. Some of the crustaceans at the very bottom of the series are wholly without antennæ, or are furnished with them in a merely rudimentary state. Some species have no more than a single pair; the normal number however is two pairs. In speaking of the tegumentary skeleton we have said to which of the rings these appendages belong; we shall only say further here, that they may be inserted on the superior or inferior surface of the head according to the respective development of the different pieces of which this segment is composed. They do not differ less widely in their form and composition, and under this double point of view present modifications analogous to those which we have specified as occurring in the extremities.'



a, right external antenna of Thelphusa fluviatilis; *b*, right antenna of the same. (Desmarest.)

Organs of Reproduction.

In the whole class the sexual organs are separate, that is, they never co-exist in the same individual, and the reproduction is oviparous. The apparatus is double, each branch being distinct, and in some cases, completely independent of its opposite. The celebrated hermaphrodite lobster (*Phil. Trans.*, 1730, p. 290), presented a different sexual organ on each side, and both the male and female portion were complete. In the more perfect crustacea the analogy between the male and female organs is so great as frequently to deceive the observer at first sight.

Male Organs.—Our limits do not permit us to enter into a detail of all the phases of this part of the organization in the crustacea, and we therefore select the *common crab*, not only on account of the facilities which it presents to the inquirer, but because the apparatus, especially in the season of activity, is so distinct and so highly developed. The testis is grape-like, the cluster consisting of four principal lobes, formed of numerous worm-like delicate canals, convoluted into pellets. The first portion is placed in the front of the thorax and terminated in a large coiled-up vessel situated on the side of the stomach; behind, and connected with it, is the deferent vessel, a convoluted canal of some size and of a milky colour. It is twisted about the thorax, and at last penetrates the cell of the last pair of limbs, *opening* outwardly on the basilar piece, the situation generally assigned to the aperture in the crustacea. 'In the ordinary state,' says M. Milne Edwards, 'the excretory canal terminates on the edges of the opening, but at the instant of sexual intercourse the extremity of the canal undergoes a kind of erection, and by becoming folded upon itself, like the finger of a glove, projects externally, so as to form a kind of penis adequate to the intromission of the fecundating fluid. This latter circumstance was long unknown to naturalists, who were accustomed to look upon the members of the first and second abdominal rings as the external male instruments. These two pairs of extremities, in fact, are distinguished from the rest by their shape, which is styliform, and their structure, which is tubular, being composed of two horny laminæ convoluted one upon another, the first including the second. But direct observation has deprived them of all claim to be considered as fulfilling any office of so much consequence in the economy of the crustacea as that of conveying the fecundating fluid from the body of the male into that of the female. At the most they can only be regarded as organs of excitation, and which the animal may perhaps employ at the same time to guide the male into the female organ.

'The female reproductive apparatus of the crustacea in the highest state of complication, consists of an *ovary*, an *oviduct*, and *copulatory pouches*. The ovaries in the Decapoda brachyura resemble four cylindrical tubes placed longitudinally in the thorax, and divided into two symmetrical pairs, each opening into a distinct oviduct, yet communicating with one another by a transverse canal, and by the intimate union of the two posterior tubes in a portion of their length. The oviducts as well as the ovaries are of a whitish colour; they are short, and become united in their course to a kind of sac, the neck of which extends to the exterior of the animal's body; there is one of these on each side, and they are known by the name of the *copulatory pouches*. It is into these reservoirs that the male pours the fecundating fluid which is here stored up and applied to the ova as they pass in succession along and out of the oviducts. These, after a course which is never long, terminate at the vulvæ, openings formed in the sternal pieces of the segment which supports the third pair of ambulatory extremities.

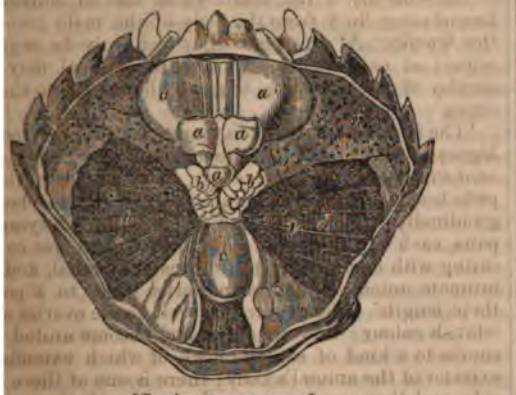
'The *Anomoura* and Macroura have no copulatory pouches, and their vulvæ are situated on the basilar joint of the ambulatory extremities of the third pair. The mode in which fecundation is accomplished in these genera, is consequently much less apparent than in the Brachyura Many writers are of opinion that this operation takes place in the interior of the ovaries, a process that appears by no means feasible on account of the inequality of development of the ova, which is such that the last of them are not in being even long after the first have been expelled It would perhaps be more correct to suppose that fecundation does not take place till after the ova are laid, which we know to be the case among the *Batrachia* and the greater number of fishes.

'The female crustacean does not abandon her eggs after their extrusion. Those of the Decapods preserve them under their abdomen by means of the abdominal extremities modified in their structure. The Edriophthalmia again keep them under their thorax by means of the flabelliform appendages of the extremities belonging to the region; whilst the inferior genera, such as the Entomostraca, &c. have suspended to the external orifices either horny tubes or a pair of membranous sacs which contain and transport them from place to place. These varieties in the accessory organs of generation are, in many cases, sufficient to distinguish the sexes: thus, among the Decapoda brachyura, the females are known at a glance by their wider abdomen, which is sometimes of such dimensions as to cover the whole sternum. Sometimes these sexual organs extend to the antennæ and to various other organs; sometimes it even influences the size, and occasionally, as we have said, the general external conformation is modified to such a degree, that the male and the female of one and the same species have been taken as types of two distinct genera.'

The progress and incubation of the ovum, though a subject of the highest interest, would, if detailed, occupy more space than can be allotted to the department which now occupies our attention, and we must content ourselves with stating that the majority of the class do not make their exit e egg till the whole of the organs necessary to their n are developed, and till their form presents but ifferences from that which is presented by the adult

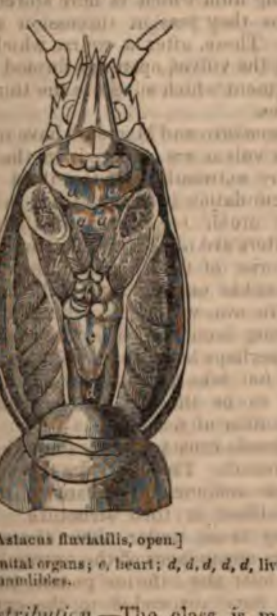
But it is otherwise in many of the crustaceans, ly those of the lower class, which may be said to be ematurely, and then have to pass through a series ges which have been properly termed metamor- before they reach their final shape. M. Milne ls observes that these changes, whatever their , depend on the following circumstances:—1st. The ation of the normal work of development. 2nd. equal growth of different parts of the body; and, e atrophy and complete ultimate disappearance of parts.

following cut will convey some idea of the relative of the parts in the carapace, and that of Thelphusa lis (p. 189) of the relative external position of the alluded to.



[Carcinus mænas, open.]

a, a, stomach; b, b, genital organs; c, heart; d, d, branchiæ; e, f, f,



[Astacus fluviatilis, open.]

a, stomach; b, genital organs; c, heart; d, d, d, d, d, liver; e, e, bran- f, muscles of the mandibles.

graphical Distribution.—The class is most widely ited, and the form seems adapted for every climate. *e in the Animal Series.*—The insects and arachni- re the forms to which the crustaceans bear the t relations.

Systematic Arrangement.

ost every writer on this interesting class of animals bodied his own views in their classification. Among ncipal zoologists who have written on the subject, nes of Cuvier, Desmarest, Latreille and Leach, will, any others, occur to the observer. We select the ement of M. Milne Edwards, because it is founded tomical investigation, and on actual experiment n a great many instances by himself and M. Au-

Milne Edwards, then, makes the Crustacea to con- two great divisions.

1st. Of those which have the mouth furnished with a certain number of organs, destined in an especial manner to the prehension or division of the food.

2nd. Those which have the mouth unfurnished with special prehensile or masticatory organs, but surrounded by ambulatory extremities, the bases of which perform the part of jaws. We shall take this second division first because it contains but one order, viz., the **XYPHOSURA** (Xiphosura). Example, *Limulus*.

But it is to the first division that the great mass of the crustaceans belong, and these are subdivided into two great groups.

1st. The MAXILLOSA or MANDIBULATA, which possess a mouth armed with jaws, &c.

2nd. The EDENTATA or HAUSTELLATA, whose mouth is prolonged in the shape of a sucker.

The MAXILLOSA are separated into four great sections.

I.

PODOPHTHALMIA.

These almost always possess true *branchiæ*, pedunculated and moveable *eyes*; *feet* or *extremities* vergiform, partly prehensile, partly ambulatory; and a thorax covered by a carapace.

The *Podophthalmia* contain two orders, the *Decapoda* and *Stomapoda*.

1st. DECAPODA, whose branchiæ are fixed to the sides of the thorax, and are inclosed in special respiratory cavities. The oral apparatus is composed of six pairs of members. There are five pairs of thoracic extremities, which are generally ambulatory. The DECAPODA are divided into 1st, the *Brachyura* (Cancer, Portunus, Grapsus, &c., &c.); 2nd, the *Anomoura* (Dromia, Ranina, Pagurus, &c., &c.); 3rd, the *Macroura* (Astacus, Scyllarus, Palæmon, &c., &c.).

2nd. STOMAPODA, whose branchiæ are external; sometimes rudimentary or none. Oral apparatus composed in general of three pairs of members. Thoracic extremities prehensile or for swimming; generally six or eight pairs. (Mysis, Phyllosoma, Squilla, &c., &c.)

II.

EDRIOPHTHALMIA.

True branchiæ none, but replaced by certain portions of the extremities modified *ad hoc* in their structure; eyes sessile; thoracic extremies ambulatory, almost always consisting of seven pairs; no carapace. The *Edriophthalmia* contain three orders, viz., the *Amphipoda*, the *Læmodipoda*, and the *Isopoda*.

1st. AMPHIPODA. These have the *palpi* of the thoracic extremities vesicular, and subserving respiration. The *abdomen* is very much developed, subserving locomotion, and is furnished with six pairs of limbs, the three first of which differ in form and use from the three last. (Gammarus, Talitra, &c., &c.)

2nd. LÆMODIPODA. Abdomen rudimentary. Palpi of the thoracic extremities vesicular and subserving respiration. (Proto, Caprella, &c.)

3rd. ISOPODA. Abdominal extremities well developed; the five first pairs lamellar and subserving respiration. Abdomen well developed. (Idotea, Spheroma, &c., &c.)

III.

BRANCHIOPODA.

No true *branchiæ*, but thoracic extremities lamellar, membranous, and so formed as to be subservient to respiration. The *Branchiopoda* contain two orders, *Phyllopoda* and *Cladocera*.

1st. PHYLLOPODA. No bivalve, shell-like covering. Extremities natatory, and in considerable numbers (from 8 to 22). (Branchipus, Limnadius, &c., &c.)

2nd. CLADOCERA. Carapace in form of a bivalve-shell. Thoracic members five pairs. (Daphnia, &c.)

IV.

ENTOMOSTRACA.

No *branchiæ*, nor any modification of organ apparent to supply the place of these. Eyes sessile, and commonly united into a single mass. The *Entomostraca* contain two orders, viz., the *Copepoda* and *Ostrapoda*.

1st. COPEPODA. Body divided into distinct rings, neither carapace nor valvular envelope. Thoracic and oral members in considerable numbers. (Cyclops, Pontia, &c.)

2nd. OSTRAPODA. Body without very evident annular divisions, and entirely inclosed under a large dorsal shield having the form of a bivalve-shell. Extremities in very small number. (Cypris, &c.)

2. Edentata

The **Edentata** contain three orders, viz., the *Araneiformes*, the *Siphonostomata*, and the *Lernæiformes*.

1st. **Araneiformes.** Extremities rod-like, long, adapted for walking. (Pycnogonon, Nymphon.)

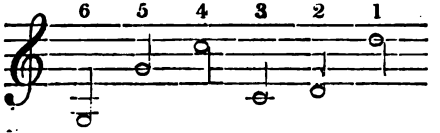
2nd. **Siphonostomata.** Extremities not adapted for walking; partly lamellar, partly prehensile. (Caligus, Dichelestion, &c.)

3rd. **Lernæiformes.** Extremities rudimentary, body presenting anormal forms. (Lernæa, &c.)

Fossil Crustacea.

Crustacea occur in a fossil state throughout the series of fossiliferous beds. One form now extinct appears to have been among the earliest of the created beings whose remains have been preserved to us. The Trilobitic type is to be traced from the oldest fossiliferous strata to the coal-measures; and the Decapoda have been found below the chalk, in the chalk, and in some of the most recent deposits. Even the branchiæ and eyes of some of these fossil crustaceans are in a high state of preservation. The details of this part of the subject will be found under the heads treating of the families and genera noticed in this work whose organic remains have been discovered.

CRUTH, or CRWTH, a musical instrument of the violin kind, formerly much used in Wales. Sir John Hawkins says that 'it somewhat resembles a violin, twenty-two inches in length and an inch and a half in thickness. It has six strings, supported by a bridge, and is played on by a bow. . . . . . . The bridge is not placed at right angles to the sides of this instrument, but in an oblique direction, and one of the feet passes through one of the sound holes, and rests on the inside of the back.' The four first strings are placed as in the violin, but the fifth and sixth, which are an inch longer than the others, are fixed to the upper part of the instrument in the manner of the arch-lute [Lute], and unconnected with the finger-board. According to the same writer the notes of the Cruth were these:—



from which we are led to suppose that the strings were struck in pairs—two at a time.

The word Cruth was corrupted in pronunciation into *crowd*; hence a performer on the instrument was called a crowder. Butler, in *Hudibras*, names his fiddler *Crowdero*. (Hawkins' *Hist.*, vol. ii.)

CRUX, a southern constellation formed out of Halley's observations, by Augustin Royer, in his maps, published in 1679. It is situated close to the hinder legs and under the body of Centaurus.

Character.	No. in Catalogue of		Magnitude.
	La Caille. Fallows.	Astron. Society.	
η	1060 C	1394	4½
δ	1070 C	1406	3
ϵ	1076 C	1421	4
α^2	1082 C	1427	1
γ	1088 C	1439	2½
β	1107 C	1473	2
α^1	139 Fa.	1426	4

CRUZ, SANTA. [Santa Cruz.]

CRUZ, VERA. [Vera Cruz.]

CRYOLITE. This mineral is a fluate of soda and alumina; it is of a white colour, or reddish, or yellowish-brown, and its streak is white. It occurs in crystalline masses, but its primary form has not been observed; its cleavage is parallel to the terminal and lateral planes of a rectangular prism. Its specific gravity is from 2·94 to 2·963. It is not so hard as fluor spar, is translucent, and by immersion in water becomes transparent. It fuses by the blowpipe into a transparent globule, which becomes opaque on cooling.

It is found at Arksut-fiord, in West Greenland. According to the analysis of Vauquelin it consists of—

Fluoric acid and water .	47
Soda	32
Alumina . . .	21
	100

CRYPSIRI'NA. [Temia.]

CRYPT, a low-vaulted chamber, the vaulting of which is supported on columns, and the basement walls of a church or cathedral. Crypts are usually without windows, and when seen by torch-light their simple and massive architecture has a gloomy appearance. Some crypts have become the receptacle of the monuments of the dead, as at the abbey of St. Denis. Crypts are far from being common to all churches and cathedrals. There are some interesting views of crypts in Dugdale's 'Monasticon.'

CRYPTOCE'PHALUS (Geoffroy), a genus of Coleopterous insects of the section Cyclica, and family Chrysomelidæ. Technical characters:—antennæ filiform, nearly as long as the body; palpi with the joints nearly of equal thickness; head deeply inserted into the thorax, small and vertical; thorax nearly as broad as the elytra; body short and cylindrical.

Upwards of twenty species of this genus are found in this country; the most abundant species is *Cryptocephalus sericeus:* this little beetle is of a brilliant golden green colour, and about a quarter of an inch in length; it is found during the month of July in the flowers of the Hieracium and similar plants.

Cryptocephalus Lineola is about the same size as the last, and is found on oak trees, hazels, &c.; it is black and glossy; the elytra are red, and have an oblong dash in the middle, and the suture and outer margin black.

CRYPTOCONCHUS, a name given by some zoologists to those *Chitonidæ* whose shelly plates are entirely hidden by the investing border. [Chitons; and *Zool. Journal*, vol. v., p. 28.]

CRYPTOGA'MIA, the twenty-fourth class of the Linnæan system of plants. It includes all those genera the flowers of which are either altogether absent or formed upon a plan different from that of ordinary plants. Ferns, mosses, lichens, algæ, fungi, with their immediate allies, form the class, which is the same as the Acotyledons of Jussieu, and the Cellulares of De Candolle.

CRY'PTONYX. [Tetraonidæ.]

CRYPTO'PHAGUS (Herbst), a genus of Coleopterous insects of the family Engidæ. They are minute beetles, which are found in fungi and in flowers, and some of the species are common in damp cellars.

The Cryptophagi are seldom more than an eighth of an inch in length, generally of a pale brown colour, and more or less pubescent. They have the antennæ rather thick and eleven-jointed; the basal joint is thicker than the seven following, and the three apical joints form an elongated knob; the terminal joint is somewhat conical, and the two preceding joints are cup-shaped; the head is nearly triangular, inserted into the thorax as far back as the eyes; the thorax is nearly square, and the lateral margins are more or less denticulated; they usually exhibit an obtuse tooth-like process in the middle; the elytra are elongate; the sides are generally straight and parallel, or nearly so, and the apex is rounded.

About sixteen species have been found in this country. *Cryptophagus bituberculatus* is sometimes abundant in puff-balls, and probably inhabits other fungi.

CRYPTOPROCTA. [Viverridæ.]

CRYPTORHY'NCHIDES (Schoenheer), a family of Coleopterous insects (section Rhynchophora), the species of which are chiefly distinguished by their possessing a groove in the chest into which the rostrum is received when at rest.

This family contains upwards of twenty genera, of which the genus *Cryptorhynchus* may be considered as the type. The characters of this genus are:—antennæ twelve jointed, short, funiculus seven-jointed; the first joint rather longer than the rest; club oval or oblong-oval; rostrum moderate, rather arched: thorax often broader than long, narrowed towards the apex, and furnished with tufts on the anterior part; elytra somewhat ovate, covering the abdomen; scodistinct; legs moderate, femora often armed with a eneath.

is genus upwards of ninety species are known, only which inhabits England—*Cryptorhynchus Lapathi*. etle is less than half an inch in length, and of a wnish-black colour; the thorax is whitish at the nd is furnished on the upper part with five black ro on the anterior part near the eyes, and three in a ttle behind these, one in the middle of the thorax, on each side; the elytra are brown-white at the d white at the apex, and are studded with nume- ck tubercles.

pathi is found on willows, and is sometimes toler- undant in osier-beds in the south of England: when , like most of its tribe, it contracts its legs and falls round.

PTO'STOMA. [CHISMOBRANCHIATA, vol. vii. p. 94.]

PTU'RUS. [TINAMOU.]

STALLINE LENS. [EYE.]

STALLO'GRAPHY, or the doctrine of the relations alline forms, is in strictness an application of solid y; but it is practically allied to mineralogy, and may egarded as a subsidiary department of that science. rals occur very generally in the state of crystals, n certain definite and symmetrical forms, and these rded as crystals whether they are transparent or

id figure, of the shape of a common die, used in f chance, frequently occurs among minerals, and is med a *cube* or *cubic* crystal.

corners of this cube were to be cut off, so as to y equal portions of the three adjacent edges, a new ould be produced, which is said to be *derived* from .

edges were to be all cut off, so as to produce new making equal angles with the adjacent sides of e, another *derived* form would result. In these cube would be deemed the *primary* form, and the figures *secondary* forms of the cube.

als are very generally known by their primary but as these are of different kinds, and as natural are very generally found in secondary forms, from e primary is to be inferred, a knowledge of the lations of the primary and secondary forms is re- to enable the mineralogist to determine the primary secondary, and hence to arrive at a knowledge of ral to which any given crystal belongs.

ubject may therefore be considered under three iz.:—

ry forms,

dary forms,

ws of derivation, or the mutual relations of the y and primary.

ich we propose to add some account of the nature llization, and of the manner in which natural crys- be supposed to have been produced.

ust however premise a few definitions.

we have called the *corners* of the cube will be ts *solid angles*, and so of the corners or points of figures.

d angle or edge cut off so as to produce a new or *plane* as it is termed, is said to be *truncated.*

eries of forms resulting from each of the primary nstitutes a peculiar *system of crystallization;* there equently, as many different systems as there are kinds of primary forms.

sm is a solid figure, having any number of sides allel edges, and its two ends parallel.

ht prism is one which stands upright when placed le; if it overhangs the base in the direction of an diagonal it is termed *oblique*, and if an oblique again oblique in the direction of a second edge or it is *doubly oblique*. The bases of doubly oblique re usually oblique-angled parallelograms.

dges of the sides, and the side planes of a prism, ed *lateral*, and those of the ends *terminal* edges es.

imary forms.

are in some degree arbitrarily assumed, as it ap- m the three following figures, showing the relation the cubes and angular octahedron.

is a cube.

, a cube, with its solid angles truncated.

Fig. 3, an eight-sided figure or octahedron, which is produced when the solid angles are so deeply truncated as to obliterate all the faces of the cube.

Fig. 1

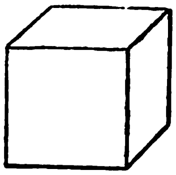


Fig. 2.

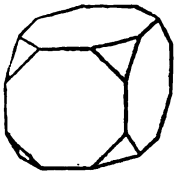
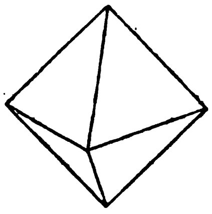


Fig. 3.



Now it is, mathematically speaking, indifferent whether we take the cube or the octahedron as the primary form of all the derived figures of this system of crystallization, for it may be readily perceived, from an attentive comparison of the above figures, that new planes which might be produced on the octahedron by the truncation of its solid angles, would correspond *in position* with the faces of the cube, and those which would result from the truncation of its edges would correspond *in position* with those which would result from the truncation of the edges of the cube. The cube might therefore be regarded as the secondary form of the octahedron, arising from the truncation of its six solid angles. Relations of the same nature subsist among the original and derived figures belonging to each kind of the primary forms, except the rhomboid. The reason for preferring the one or the other of these as the primary will be considered when we treat of the relations of the different forms of crystals.

We have, for reasons which we shall then state, assumed the following figures as the primary or fundamental forms of all known crystals.

The cube, *fig.* 1.

The square prism, in which, supposing the base of this prism to be of the same dimensions as a side of a given cube, and this and the cube to be both standing on a table, the upright edges would be longer or shorter than those of the cube.

A right rhombic prism, *fig.* 4.

An oblique rhombic prism, *fig.* 5.

A doubly-oblique prism, *fig.* 6.

A rhomboid or rhombohedron, *fig.* 7.

Fig. 4.

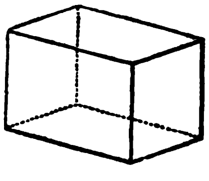


Fig. 5.

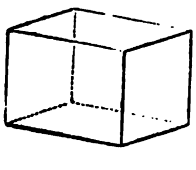


Fig. 6.

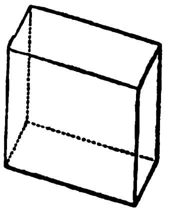
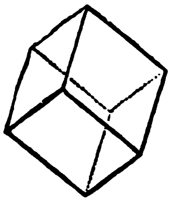


Fig. 7.



The cube being bounded by six equal square planes, the minerals which assume this form are not distinguishable by the figure of their crystals; but minerals which occur under the other forms may generally be distinguished as follows:—

Those which can be referred to square prisms, by the different proportions which, in each particular case, the lateral edges bear to the terminal edges; and those which belong to the other prisms and to the rhomboid, by the angles at which their planes intersect each other. The ratios of the edges of square prisms may be determined by known algebraical formulæ from the angular measurement of some of the secondary forms, and the angles at which the planes of the other forms meet, may, in many cases, be ascertained by measurement with an instrument called a GONIOMETER, but in others they must be deduced mathematically from some of their respective secondary forms. The treatise on Crystallography in the 'Encyclopedia Metropolitana' will supply the reader with the formulæ applicable to these purposes.

These six primary forms stand in certain relations to each other, which it may not be useless to point out. If the lateral edges of the cube be supposed to be longer or shorter than the terminal edges, a square prism, as we have already seen, would be produced; if two opposite lateral edges of a square prism could be pressed towards each other, the parallelism being kept, a right rhombic prism would be formed; if this prism could be pressed in the direction of either of the diagonals of its terminal plane, so as to make the figure overhang the base in that direction, an oblique rhombic prism would be represented; and if again pressed in the direction of the other diagonal, so that it should overhang the base in both directions, a doubly-oblique prism would be formed. If we suppose a cube to be made to stand on one of its solid angles by placing the fingers on an opposite one, and if, while held in this position, the two solid angles could be pressed nearer together or drawn further apart, the altered cube would become a rhomboid.

2. *Secondary forms.*

These might be produced, and are most conveniently described, by supposed truncations of the solid angles or edges of any of the preceding forms; but as in nature the most minute crystals appear in the shape of secondary forms, it is to be inferred that these modifications of the primary are occasioned by some natural influence operating upon the first germ of the crystal, and continuing during the period of its increase in size.

Secondary crystals are sometimes altered from the primary only by single sets of planes replacing some of the solid angles or edges; in other cases both the solid angles and edges are replaced by planes in the same secondary crystal; and in others, several different sets of planes appear replacing the solid angles and edges of the same crystals, and producing very numerous and complicated secondary forms. Thus it occurs that the solid angles of the cube are sometimes replaced by three and sometimes by six symmetrical planes, of which several sets may occur on the same crystal, and perhaps with other planes replacing the edges. Similar changes of figure may also occur on each of the other kinds of the primary forms, thus producing the different systems of crystallization before referred to.

The number of known secondary forms belonging to each system is already very great; in one mineral, carbonate of lime, they amount to many hundreds; but thousands and tens of thousands more might occur under the operation of only a few of the laws of which we shall afterwards treat.

Among the secondary forms of crystals there are some which differ in their characters from those already described. Let us suppose two diagonal lines to be drawn through opposite angles, and crossing each other on the faces of the cube. It may be observed, by referring to *fig.* 2, that the solid angles at the extremities of all these diagonals are truncated to produce the octahedron; but it sometimes happens that the solid angles at the extremities of only one of those diagonals on one plane, and a transverse diagonal on a parallel plane, are truncated, producing a four instead of an eight-sided secondary figure; these are termed *hemi* forms, from their presenting only half the number of planes which might be expected from the symmetry of the primary crystal. These *defective* figures, as they may be termed, from their wanting the number of faces which might be expected on the crystal, are frequently troublesome to the mineralogist, and occasionally mislead him; but there is another, of a much more capricious deviation from the regularity of the simple forms, which is still more troublesome than the preceding; these are what have been termed *hemitrope* and *twin* crystals. In twin crystals the two individuals are united in such a manner that if one of them be made to describe a half-revolution round an axis perpendicular to a plane, which is either a face of one of the crystals or which might be one in virtue of the laws of crystallography, it comes into the position of the other.

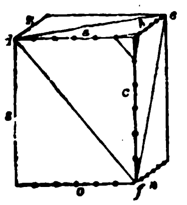
Twin crystals are produced by the union of two or more crystals according to some regular plan, so that if any number of twin crystals of the same kind of mineral should be found, they would be fashioned in the same manner. Hence these apparently capricious composite figures are subject to definite laws, and are not the results of merely accidental aggregation. There are also two other classes of irregular forms of crystals, one of which, termed by Haüy *epigene*, occurs where a crystallized mineral has undergone a chemical change without disintegration or suffering any change of figure; the form in the altered state of the mineral not being proper to the new substance, but remaining that of the original body.

The other class, termed *pseudomorphous*, appears as if they had been produced in moulds resulting from the destruction of crystals of other substances which had been inclosed or embedded in them, and which moulds being filled with some new kind of mineral, the new and intrusive matter assumes the form of the originally inclosed body, and one altogether foreign to its proper shape. Tables of the secondary forms of crystals will be found in the article 'Crystallography' already referred to, and a copious illustration of composite crystals may be seen in the 'Edinburgh Journal of Science,' vols. i. and ii.

The secondary forms of crystals are not derived from the primary by accidental and indefinite truncations of the solid angles and edges, but according to known and definite laws, so that all the possible alterations of figure which any given primary form can undergo, might be determined *à priori* if the extreme limits of the relative proportions of the edges considered to be cut off in producing new planes were known. Within well ascertained limits, however, many thousands of possible secondary form, belonging to each kind of primary, might be determined with absolute precision.

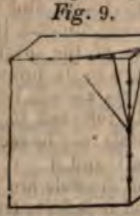
The laws according to which any secondary planes are produced are termed the laws of those planes. To illustrate the nature of these laws, let *fig.* 8 represent a square prism, whose edges *a b c* are each divided into any equal number of parts, which parts are consequently proportional to the respective edges. Now a new plane, which should cut off one proportion from each of the edges *a b c*, would evidently be parallel to the plane *d e f*, whose edges would coincide with diagonals of the primary planes. It would carry us beyond the limit to which we must restrict this paper, if we were to enter upon a geometrical consideration of these lines, and we shall therefore confine ourselves to this statement, that if on any square prism we find a set of planes truncating its solid angles, and if we assume the edges of these planes to be respectively parallel to the diagonals of the primary planes, the ratio or comparative lengths of the edges *a* and *c* may be found, and thus the distinction between prisms of different heights belonging to different minerals may be ascertained. Crystals belonging to the other primary forms may generally be distinguished, as we have already stated, by measurement of the angles at which the planes severally incline to each other. But in order to investigate the laws of their respective secondary planes, we require to know the comparative lengths of the lateral and terminal edges, which may be found by means analogous to those we have just described. The rhomboid however, whose edges, like those of the cube, are all equal, does not require this preliminary investigation, but the laws of new planes may be determined from measurement alone.

Fig. 8.



n a plane similar to that shown in *fig.* 8 occurs on
id angle of a crystal, it generally occurs on all the
establishing what Haüy has termed the *law of sym-*
But, as we have before stated in reference to the
is law is occasionally deviated from by the produc-
only one-half the symmetrical number of secondary
on a square prism. This remark also applies to such
nds of secondary planes as we now proceed to describe.
es the plane shown in *fig.* 8, there are *three* other
ffecting the solid angles.
such as would cut off one, two, three or more por-
the edges *a* and *b*, but at the same time some other
from the edge *c*. Thus if one portion be cut from
ne from *b*, there will be two, three, four, or some
umber cut from *c*; or if three portions were cut from
hree from *b*, either one, two, four, five, or some other
would be cut from *c*, so that a numerous series of
of this nature might occur on each solid angle.
econd kind of planes are those which would cut off
l number of parts from *a* and *c*, but a different
from *b*. But in this case there would be two
n each solid angle, for if we suppose one plane to cut
rts from *a*, and three from *c*, and two from *b*, a second
ould also be produced, cutting three parts from *b* and
wo from *a*, producing two planes similar to those in

Fig. 9.



of the series of planes of the first kind would have
parallel to the diagonal *d e*, *fig.* 8; and each of
the second kind would have edges parallel to the
s *d f* and *e f* of the same figure. The planes of
d class also occur in pairs, and are such as would
uced by cutting off dissimilar numbers of parts
e three edges, such as two parts from *a*, three from *b*,
from *c*, none of the edges of these new planes being
to any diagonal.
econdary planes on the terminal edges may cut off
nber of parts from the edges *r* and *b*, and the same
other number from *s* and *c*. Those on the *lateral*
they cut unequal portions from *a* and *o*, and *b* and
e found to occur in pairs. Single planes on the
edges are such as would result from cutting *a*
and *b* and *n* equally; and the secondary planes on
er primary forms are produced by laws analogous
we have just described.
easons for preferring prisms to octahedrons for the
forms may be thus briefly stated.
ave already seen that the octahedron derived from
e might be taken as the fundamental or primary
f that system of crystallization. An octahedron
from the truncation of the upper and lower edges
quare prism, or of its solid angles, by planes which
ntersect the terminal planes parallel to their dia-
might be assumed as the primary form of this
and octahedrons similarly derived from the other
night also be regarded as the primaries of their re-
systems. And these figures have accordingly
opted by Möhs as the fundamental forms of his
of crystallography. From the greater simplicity,
, of derivation which results from the assumption
prisms as primary forms, and the greater mathe-
facilities in determining the relations of the de-
the primary, we have been induced to retain them
ndamental forms of our system. For the relations
these primary and their respective secondary forms
rding to our plan, dependent only upon the *propor-*
the primary edges required to be cut off to produce
econdary planes. But in taking the octahedrons as
s, Möhs has founded the relations of these to the
ry figures upon the *relative lengths of the axes* of
ved figures, according to which view of derivation
ral planes of the square prism would be denoted
of an octahedron with an infinitely long axis, and
planes as those of an octahedron with an infinitely
xis. And for all the various prisms which may occur, octahedrons must first be found, from the infinite prolongation of whose axes the given prisms may be produced. From the complexity of this method it will probably not extend far beyond the school of its highly ingenious author.

The exact relations among primary and secondary forms may be determined mathematically, sometimes from measurement and sometimes from parallelisms between certain edges of the secondary figures. And the mathematical processes may be either those of plane trigonometry, as applied by Haüy; or spherical trigonometry, as used by other authors; or analytical geometry, as applied by Mr. Whewell, in a paper in the Phil. Trans. for 1825; or by referring the planes of the crystal to the surface of a sphere, and denoting their positions stereographically, as shown in a paper by Professor Miller, of Cambridge, in the London and Edinburgh Phil. Mag. of February, 1835.

Crystallization and the circumstances under which it takes place form an interesting subject of inquiry, not only in respect of the variety of figures under which crystals present themselves, but in relation to much more comprehensive geological investigations into the formation of the early crystalline rocks and the various embedded crystallized minerals, and into the manner in which the numerous crystalline bodies found in the metallic and other veins have been produced.

From the great length of time during which these natural processes must have been in action, the slowness with which they probably have proceeded, and the hidden recesses in which they have taken place, the progress of natural crystallization can scarcely be said to have been ever observed. For the production of saline crystals at the bottom of certain lakes, and even that of iron pyrites, which are said to have been observed in a progressive state of formation, cannot be regarded as belonging to the class of phenomena we are contemplating.

Not having therefore the operation of nature open to our inspection, our only sources of information relative to the formation of crystals are those afforded by the processes of artificial crystallization, and here until very recently our experiments were circumscribed, and our views bounded by a very few modes of operation; that of the deposit of crystals from solution in some fluid; their production while gradually cooling from a state of fusion; and their volatilization by heat or otherwise. Latterly, however, by the aid of that universal agent, electricity, new methods of producing crystals have been pursued: much of the darkness in which the subject had been previously involved has been dispelled, and there can now be little doubt that all the phenomena of crystallization are governed in a greater or less degree by electric influence.

The crystallization of salts from solution in fluids generally takes place when the solutions are sufficiently evaporated, but the degree of evaporation is very different for different substances. Some salts begin to crystallize at the surface very soon after evaporation commences, and others (for example, sugar) must be evaporated to the consistence of a thick syrup before any crystals will be formed. Hot fluids will generally dissolve more matter than cold ones, and crystals are frequently produced during the cooling of the hot solution. Some soluble substances however cannot be brought to crystallize under any circumstances hitherto tried; but on the solvent evaporating, a thick pasty matter is left, which by further evaporation becomes a hard solid mass. Camphor affords an instance of the formation of crystals by volatilization. The sides of a bottle containing this body may frequently be observed incrusted with brilliant crystals.

The slags of furnaces will frequently be found to contain crystallized matter; and the common rolls of sulphur when broken will frequently present small cavities lined with thin needle-like crystals.

The later processes to which we have referred depending upon electricity, have been suggested and put in operation chiefly by Mr. Becquerel, who has by the electrical induction of chemical action effected the crystallization of mineral bodies which are wholly insoluble in any fluid which does not subject them to immediate chemical change. At the meeting of the British Association in Bristol, some experiments of the same nature were described by Mr. Fox and Mr. Cross, who it appears had been following up Mr. Becquerel's course of experiments without being aware of the extent to which they had been carried, or of the means employed by him to produce his results. Some account of these experiments will appear in one of the forthcoming London scientific journals.

CSABA, or **TSABA**, in the south-east of the county of Békes, in Hungary, one of the largest, if not the largest, village in Europe. It was built by Baron von Harruckern in 1715, and colonized with Lutheran Slowaks, who are now become identified with the native Hungarians. It is situated on the Hejo, in 46° 40′ north lat., and 21° 8′ east long. It contains a Protestant church and about 2000 houses. In 1819 the population amounted to 17,850; it has since increased to upwards of 20,000, of whom 16,700 are Lutherans, and 2700 Roman Catholics. The vicinity produces an inferior kind of wine, but very considerable quantities of grain, flax, and hemp; the grazing of cattle and sheep is carried on upon an extensive scale. The Körös flows near this village. In population it is inferior only to eight other places in the kingdom.

CSANAD, or **TSANAD**, a county of Hungary. [CHONAD.]

CSONGRA′D, a county of Hungary, nearly in the centre of that kingdom, and on each side of the Theiss. It is separated by the Marosh from the county of Toronta. Its area is about 1323 square miles; it contains 1 royal free town, Szegedin, 3 market-towns, 6 villages, and 30 extensive prædia, or privileged settlements, and has a population of 108,235 in 1825; now of about 113,000 souls, 70,060 of whom are Roman Catholics. The surface is a plain, here and there interrupted by low hills, covered with woods or vineyards; the soil is in general a black rich loam, in parts sandy or swampy. Being liable to extensive inundations, the water is not good, nor is the climate healthy. It is watered by three large rivers, the Theiss, Marosh, and Körös, besides the Kurcza, Korogy, and other minor streams. The land available for cultivation is estimated at 695,390 acres, of which about 82,800 are occupied by woods, and 176,020 by pastures; the remainder is arable land, vineyards, or gardens. It is a fine grain country, particularly for barley, maize, and oats; much flax and excellent tobacco are raised; it produces an inferior sort of wine, and maintains large flocks and herds. The Csongrád oxen are esteemed the finest in the kingdom, and there are numerous establishments for breeding horses. Swine in great numbers are fed on acorns and maize; and much wax and honey are made.

CSONGRA′D, a market-town in the north-west of the county of the same name, on a neck of land formed by the confluence of the Körös and Theiss, in 46° 43′ N. lat. and 20° 9′ E. long. It is the county-town, is well-built, and has about 13,000 inhabitants, who live chiefly on the produce of their vineyards, rearing cattle, and trading with other parts of Hungary. The old castle is fallen into complete decay.

CTENODA′CTYLA (Dejean), a genus of Coleopterous insects, of the section Geodephaga, and subsection Truncatipennes. Technical characters:—body but slightly elongated, flattened; thorax longer than broad, truncated posteriorly; terminal joint of the palpi almost oval; three basal joints of the tarsi dilated, nearly triangular or heart-shaped; claws denticulated beneath.

Dejean in his 'Catalogue des Coléoptères' only enumerates three species of this genus, all of which are from Guiana. There are however other species known. *Ctenodactyla Chevrolatii* is less than half an inch in length, of a blue-black colour above, and brown beneath: the thorax is red, and the legs and antennæ are yellowish-red.

CTENODA′CTYLUS, a genus of rodent animals of the family *Arvicolidæ*, established by Mr. Gray.

Generic Character.—Each *foot* with four toes only and an obsolete clawless wart in place of the thumb: claws small and falculated; *toes pectinated* internally, with small bony appendages. *Tail* very short and hairy. Dental formula:

$$\text{Incisors } \frac{2}{2} \quad \text{Molars } \frac{3\;3}{3\;3}. \text{ (Gray).}$$

Mr. Gray is of opinion that this subgenus appears to be most nearly allied to the Lemmings (*Lemmus*), with which it agrees in teeth and form, but differs from them in only having four free toes on each of the feet and a very obscure clawless wart in place of the thumb, and in the claws of all the feet being short and incurved, those of the hinder ones being covered with a tuft of rigid hair, more especially to be distinguished in the two inner toes, each of which also has a double, small, deeply pectinated, bony plate on its inner side. The tail is very short, scarcely longer than the fur of the back, covered with long bristly hair. The cutting teeth incurved, the lower rounded in front, the upper concavely truncated. The upper grinders are probably like the lower, which are laminar and with a two-lobed crown, the anterior lobe being transverse, narrow, round on the outer, and narrow and sharp on the inner side; the hinder, lobed, larger, and rounded, the lobe of the two anterior ones being rather wider than long, and that of the last as long as it is wide. (Gray.)

The following species is recorded by the author above quoted: *Ctenodactylus Massonii, Masson's Comb Rat.*

Description.—Fur soft, silky; upper parts fulvous brown; the hair very thin, pale lead-coloured at the base, pale fulvous at the end, with very short blackish tips, especially upon the head; chin, throat, inner side of limbs and beneath whitish, with the same lead-coloured base to the hairs. Head rather small and densely hairy; muzzle very small, black; mouth rather small; cutting teeth exposed, rounded and smooth in front, white; the whiskers very long, twice as long as the head, rigid, black, with two or three slender long bristles over the eyebrows; eyes moderate, rather nearer the ears than the end of the nose; the ears rounded, externally covered with dense short fur like the body, internally rather naked, black, with a distinct helix. Limbs short; the feet covered with shortish rather adpressed hair; the fore feet short; the toes free, the two middle ones nearly equal, the inner rather shorter, and the outer shortest of all; the claws short, subequal, incurved, black, not so long as the hinder ones; the hinder feet large with naked soles; toes free, the three inner equal, the outer rather the shortest, the two inner toes with two series of four or five bony laminæ placed side by side, forming a comb-like process, and covered with some very stiff bristly incurved hair; the tail very short, cylindrical, ending in a parcel of rather rigid black-tipped hairs. Size and shape about that of a half-grown guinea-pig. Length (stuffed specimen) from nose to base of tail, 9 inches: of the tail, 1 inch (the longest bristle extends beyond the tip); of the hind feet, 1¼ inch; of the ears, $\frac{3}{12}$ of an inch. (Gray.) Locality, Cape of Good Hope.

'I am not aware,' says Mr. Gray, speaking of the comb-like appendage, 'of the same kind of process being found on the toes of any of the Mammalia. It most nearly resembles the pectinated edge of the claws of the middle toes of the feet of the Goatsuckers and Herons: it may probably be used for the same purpose to clear their coats of intruding insects, and this idea is strengthened by the fact of the two living animals in the collection of the Zoological Society, said to come from Barbary, continually scratching themselves with their hind claws. Some of the Lemmings, to which these animals are most nearly allied, are peculiar for having a very curious conformation in the claw of the index finger of the hand.'

Mr. Gray refers to two specimens in the British Museum, one of which is marked in the hand-writing of his late uncle Dr. E. W. Gray. 'C. B. Spei Masson, 1744, appears to be a variation of No. 1,' which last Mr. Gray thinks is probably the other specimen in the British Museum, which is rather larger.

The species is named after Mr. Francis Masson, who was one of his majesty's gardeners, and published a paper in Phil. Trans., lxvi. (1775), giving an account of three journeys from Cape Town to the southern parts of Africa, undertaken for the discovery of new plants, towards the improvement of the Royal Botanical Garden at Kew.

The description of this curious animal is taken from Mr. Gray's 'Spicilegia Zoologica*,' where there is a figure of the species, and where the reader will find much original and valuable information illustrated by plates.

CTE′NOMYS. [MURIDÆ.]

CTENO′STOMA (Klug), a genus of Coleopterous insects, of the section Geodephaga, and family Cicindelidæ. Distinguishing characters:—the basal joints of the anterior tarsi dilated in the male sex, the third with an obliquely elongated portion on the inner side; body narrow and long; thorax long, somewhat globular in the middle, and suddenly constricted towards the base and apex; antennæ setaceous; palpi long and distinct; mentum furnished with a tooth-like process in the anterior and emarginated part.

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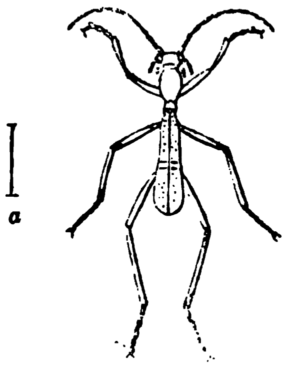
* 'Spicilegia Zoologica, or original Figures and short systematic Descriptions of new and unfigured Animals,' by John Edward Gray, F.G.S., &c. &c., part 1, 4to., London, Treüttel and Co., and W. Wood.

Ctenostoma macilentum (Klug), is about half an inch in length, and of a brassy-black colour; the elytra are distinctly punctured, and have a transverse yellowish farsia in the middle; the legs are yellowish



[Ctenostoma macilentum.]
a, denotes the natural length.

This species is from Buenos Ayres. Eight or nine other species are known, all of which inhabit South America: several are from Brazil.

Under this head may be noticed three other genera closely allied to the one just described: the genera *Therates*, *Tricondyla*, and *Colliurus*.

The species of these three genera are at once distinguished from those of Ctenostoma, by their having no tooth-like process in the emargination of the mentum. The principal characters of the genus *Therates* (Latreille) are as follows:—tarsi nearly the same in both sexes, the third joint shorter than the two basal joints, and notched at the extremity; fourth joint very short and heart-shaped; internal maxillary-palpi very small, and consisting of one joint only.

The species of this genus are of an intermediate form, between Ctenostoma and Cicindela: they are shorter and broader in proportion than those of the former, and hence approach the latter; but the thorax is of that same globular form (though short) as observed in Ctenostoma.

Only four or five species are known, and these are from Java and Guinea: their colouring is very brilliant.

Therates labiata is of a brilliant blue colour, with violet reflections; the elytra are nearly double the width of the thorax; the labrum, femora and abdomen, are of a reddish-yellow colour.

The species of the genus *Tricondyla* (Latreille) very much resemble, in form and general appearance, those of Ctenostoma; but they may be distinguished by their having the joints of the tarsi nearly equal in length, the three basal joints of the anterior tarsi of the males dilated, the third being prolonged obliquely on the inner side, and the palpi being less conspicuous from their comparatively smaller size.

Of this genus three species are known: they inhabit the islands north of Australia.

The technical characters of the genus *Colliurus* are:—fourth joint of all the tarsi prolonged on the inner side in both sexes; thorax elongate, nearly cylindrical, and constricted near the base and apex; body elongate, nearly cylindrical, broader towards the posterior part; antennæ short, slightly thickened towards the apex.

All the species of this genus as yet discovered (which amount to only four or five) are found in the southern parts of Asia, and in the islands north of New Holland.

Colliurus emarginata (Dejean), is about an inch in length, and of a dull blue colour; the elytra are coarsely punctured, and truncated at their apex; the legs are black, with the exception of the thighs, which are red.

CTE'SIAS (Κτησίας), the son of Ctesiochus, was a Greek physician and historian, who flourished about the end of the fifth century B.C. He belonged to an Asclepiad house at Cnidos, but spent seventeen years of his life at the court of Artaxerxes Mnemon. (Diodor. ii. 32.) We gather from Tzetzes (Chil. i. 1, 82), that he was taken prisoner at the battle of Cynaxa (401 B.C.), and Diodorus says, that he was raised from the situation of a captive to his post of royal physician; but it appears from Xenophon and Plutarch (*Anab.* i. 8, § 27; vit. *Artaxerxes*, c. xi.), that he was one of Artaxerxes' immediate attendants at that battle, so that of course he could not have fallen into the hands of the Persians on that occasion. It is more probable that the great estimation in which Greek physicians were held in Persia, where they had, since the time of Democedes, completely superseded the Egyptian practitioners, induced Ctesias to follow the example of some of his countrymen, and betake himself to a country where his art was so much more appreciated and so much better rewarded than in Greece. Ctesias wrote—I. Persian History, in twenty-three books, of which the first six treated of the Assyrian monarchy, and the remainder carried down the history of Persia to the year 398 B.C. (Diod. xiv. 46; and the end of the Persica in Photius.) II. Indian History, in one book. III. A Treatise on Mountains. IV. A Description of Sea-coasts. V. On the Revenues of Asia. VI. On Medicine. We have many fragments of his historical writings, especially of the Persian History, which are mainly preserved in the *Myriobiblon* of Photius: there are also fragments in Diodorus, Ælian, and other writers. Diodorus says (ii. 32), that he had access to the royal archives; but Aristotle, Plutarch, and Lucian, charge him in strong terms with inaccuracy and falsehood. The opinion of the two last-mentioned writers however is of no value. Mr. Clinton thinks that Ctesias had no intention of misrepresenting, but that his materials were not trustworthy (*Fasti Hellenici*, ii., p. 308); and an elaborate justification of his general veracity has been attempted by Bähr, in the introduction to the best edition of the remains of this author which has yet appeared. Ctesias wrote mainly in the Ionic dialect: he is much commended by Photius for the clearness and simplicity of his narrative. (*Francof. ad Mænum*, 1824.)

CTESI'BIUS, an Alexandrian Greek who lived about B.C. 150—120, the instructor of Hero (according to Pliny), and the inventor of various hydraulic and other machines, according to Pliny, Vitruvius, Philo of Byzantium, Athenæus &c. This is all we know of Ctesibius, except that he wrote various works, which are referred to by Vitruvius, and cited (cap. 1) with those of Archimedes, where mention is made of authors on physics. A manuscript of Geodesy is said to be in the Vatican, and another entitled 'Belopoeica' in some English library (Heilbronner is authority for both, who cites Possevinus, *Bibl. Sel.*, edit. Rom., c. 8, p. 201, and the catalogue of the Cambridge library (?)). There is a life of Ctesibius by Bernardino Baldi, Aug. Vend., 1614.

Of the clepsydra we have already spoken. [CLEPSYDRA.] The remaining inventions attributed to Ctesibius are the water organ, mentioned by Pliny and Vitruvius, a pump for raising water, described by the latter, and, according to Philo of Byzantium, a machine similar in principle to the air-gun. But all these contrivances are imperfectly described, excepting only the pump, which was like what we now call a forcing-pump. The water was raised by exhaustion into a cylinder with an entering and issuing valve: it entered by means of the former, and was expelled through the latter by the descent of the piston.

CTE'SIPHON, a town of Assyria on the eastern bank of the Tigris, a little below Seleuceia, and 18 or 20 miles from the present Bagdad, was the winter residence of the kings of Parthia. (Strabo, p. 743 *c*; Tacitus, *Ann.* vi. 42.) They preferred Ctesiphon in the winter on account of the mildness of the climate: in summer they resided at Ecbatana or in Hyrcania. The town appears to have been founded by Vardanes. (Ammianus Marcellinus, xxiii. 20.) Ctesiphon was destroyed by the emperor Severus, A.C. 198. Near this place are some remains, especially the Tauk Kesra, of which a particular description is given by Ives. [BRICK WORK, p. 411.]

CTE'SIPHON, an Athenian, son of Leosthenes, of the deme Anaphlystus. He is known for a decree by which he proposed to present Demosthenes with a golden crown as a public acknowledgment of his services to the state. An accusation founded on this decree was brought against Ctesiphon by Æschines, who charged him with unconstitutional proceedings. Demosthenes replied in his celebrated oration 'on the Crown' (περὶ στεφάνου), and Ctesiphon was acquitted. The attack and the defence are both extant. The case was tried B.C. 330. (Demosthenes *on the Crown*, §§ 243, 266; Clinton, *Fast. Hel.*; ÆSCHINES; DEMOSTHENES.)

CUBA is the largest of the islands which constitute the Columbian Archipelago. The most eastern point, Cabo Maysi, is in 74° 11′, and the most western, Cabo San Antonio, 84° 58′ W. of Greenwich. Cabo de Cruz, the most southern point, is 19° 47′ 16″, and Cabo de Guanos, east of Matanzas, the most northern point, 23° 9′ 27″ N. lat.

length of the island from Cabo Maysi to Cabo San Antonio, along the curved line, is 793 miles. It is widest near the meridian of 77°, where between Punta Maternello on the northern coast, and the mouth of the Rio de la Magdalena, near the Pico Tarquino, it is 127½ miles across. Between Puerto Principe and the Havanna, which tract comprehends about four-fifths of the island, it is only 52 miles wide on an average. The western extremity is still narrower, the isthmus between the Havanna and the port of Batabano being only 28 miles across. The surface of Cuba alone, according to the latest calculations, is 42,212 square miles; and when the islands are added, which are inclosed within the numerous reefs which surround it, 43,412 square miles. Its extent is therefore about 7000 square miles less than that of England, not including Wales.

The coast-line of Cuba is above 2000 miles, but hardly one-third of it is accessible to vessels; the remainder is surrounded by banks, reefs and rocks. The coast from Cabo de Cruz to Cabo de Maysi is quite free from danger; and that from Cabo Maysi to Punta Maternello has only a few rocks. At Punta Maternello commence the numerous keys of the Old Bahama Channel, which extend for more than 300 miles to Punta de Icacos. In this part, or more precisely opposite the Cayo Cruz and Cayo Romano, the Old Bahama Channel is narrowest, being only 15 or 20 miles across. Between the keys and Cuba is an open sea, which may be navigated by small vessels. From Punta de Icacos to Bahia Honda, west of Havanna, the coast is again free from keys and rocks. To the west of Bahia Honda commences the series of shoals and rocks called Los Colorados, which extend to Cabo San Antonio. From the last-named cape to Punta de Piedras or Llana Punta, the high coast is free from shoals and rocks. But the keys and shoals commence again to the west of the Isla de Pinos, and extend to Cabo de Cruz, under the name of Jardinillos, Cayo Breton, Cayos de Las Doce Leguas, and Bancos de Buena Esperanza. Only the coast between Cochinos Bay and Puerto Casilda, near Trinidad, forms an exception, being free from banks and rocks. In the Bay of Xagua, about thirty miles east of the Jardinillos, a spring of fresh water is said to rise in the sea with such force, that boats cannot approach it without danger. It is visited by the manati. In the sea between the northern coast of Cuba and the Florida Reef, the Gulf Stream commences, but here its current is not strong, and sometimes hardly perceptible.

Only the south-eastern part of Cuba is mountainous, that which lies between Cabo de Cruz, Cabo Maysi, and the town of Holguin. This mountain group is called Sierra or Montaños del Cobre (Snake Mountains), and probably in its highest parts rises more than 7200 feet above the sea. On the southern coast the Pico Tarquino rises to a considerable height, which however has not yet been determined. From this group a chain of hills runs in a W.N.W. direction, between Puerto Principe and Villa Clara, approaching nearer to the southern, but afterwards more to the northern shores. These hills do not attain a great elevation. To the north-west of Trinidad stand the Lomas de San Juan, which terminate in peaks and needles, and rise to about 1800 feet above the sea. The elevation of the hills seems to decrease as we advance westward. To the west of the meridian of Matanzas there is only one summit that attains 1200 feet. In this part the island resembles the environs of London, its surface being slightly undulating, and rising in general only to 250 or 350 feet above the sea. Along the southern coast large tracts of low country occur. The whole space between Batabano and Xagua is nothing but a low swamp, which extends three or four miles inland.

There are no large rivers in Cuba. Some are navigable a few miles inland for small boats; others are used for irrigating the adjacent fields.

The climate of the Havanna differs considerably from that of Kingston in Jamaica, though the difference of position does not exceed five degrees This difference however principally occurs in the cold season, when the thermometer at the Havanna nearly every year descends to 60°, and sometimes to 55°, whilst at Kingston it is never seen below 69° or 68°. The mean annual heat at the Havanna is 77°, that of the hottest month (July) 84°, and that of the coldest 70°: the thermometer rarely rises to 94°, or sinks to 55°. In the interior of the island however, thin ice is formed after the long prevalence of northerly winds, at places about 300 feet above the sea. But Cuba partakes, in some measure, of the climate of the temperate zone, which is proved by the sudden changes of the temperature, in which it, in some degree, resembles the United States. Humboldt mentions a change of 15° in the course of three hours. No snow is ever known to fall, either on the Lomas de San Juan, or on the Sierra del Cobre. Hail storms are rare; they occur only once in fifteen or twenty years, and always with south-south-westerly winds.

Hurricanes are less frequent in Cuba than in Jamaica and the other Antilles. Sometimes none occur for six or eight years. They vent their fury more on the sea than on the land, and happen, as in Jamaica, more frequently on the southern than on the northern coast. Humboldt states that they take place later in the year in Cuba than in the islands farther to the east and south. In the latter they are most frequent in August; in Cuba they occur mostly in October, never in July, but sometimes in August and September. The same writer observes, that the extremities of the long chain of islands called the Antilles are less subject to these dreadful storms than those in the middle, Tobago and Trinidad being entirely free from them, and Cuba not often experiencing their ravages. But, on the other hand, Cuba is exposed to the boisterous north winds (los nortes), which blow particularly during the cold months.

The division of rainy and dry seasons is not applicable to Cuba. No month of the year is free from rain. It seems, however, that the greatest quantity falls during May, June and July. In 1829 the quantity of rain was 48 inches, of which nearly 24 inches fell in these three months. Earthquakes frequently occur.

The aborigines who inhabited Cuba in the time of Columbus, were annihilated before the year 1560, though the Spaniards settled in this island only in 1511. The present population consists of whites, negroes, and mixed races. It amounted in 1827 to

Free people		443,620
namely, whites	337,126	
coloured	106,494	
Slaves		286,042
		729,662

According to a more modern census (1831), it has risen to nearly 830,000 individuals. In 1775 the number was only 170,000. This population, however, is very unequally distributed over the island, nearly four-fifths of which are very thinly inhabited, especially the southern coast, except the country between Xagua and Trinidad, and that which is east of Cabo de Cruz: there are also large tracts in the interior which are only used as pasture-ground, and contain hardly more than two individuals to a square mile. The most populous portion is between the lines from Bahia Honda to Batabano, and hence to Matanzas, where nearly the half of the whole population is concentrated, and where perhaps there are 70 or 80 persons to each square mile. The following table shows the relative population of the three intendencias, and the proportion between the whites, free coloured people, and slaves.

	Square Miles.	Population in 1827.	On a sq.m.	Of every Hundred of Inhabitants.		
				Whites	Free Blacks.	Slaves.
Western Int.	10,303	408,537	40	40	11	49
Central Int.	17,104	164,497	9	60	15	25
Eastern Int.	14,805	131,453	9	36	27	37
Total	42,212	704,487	17	46	18	37

The cerealia of Europe are not cultivated in any part of Cuba, and a great quantity of flour is consequently imported from the United States for the consumption of the white inhabitants. The slaves and people of colour live principally on mandioca, yams, bananas, and maize or Indian corn, with potatoes, sweet potatoes, &c. The objects raised for consumption and exportation are sugar, coffee, tobacco, cotton, cocoa, and indigo; but the three last on a very small scale. As immense tracts are not cultivated, but only used as pasture-ground, the number of cattle is very great, and hides form an article of exportation, but dry meat (tasajo) is imported from Venezuela. The surface under cultivation is supposed not to exceed one-seventeenth: the unculti-

d part contains large prairies or savannas, on which the
le pasture, but the greatest part is overgrown with large
st-trees, some of which supply excellent timber for ship-
ding. Gold and copper have been found in the Sierra
Cobre.

The *Western Intendencia* contained, in 1827, 449 plan-
ns of sugar, 1207 of coffee, and 400,000 heads of
ed cattle. It contains, besides the capital, Havanna,
towns of Guanabacoa on the other side of the Cay on
h Havanna is built, with 9100 inhabitants (in 1827),
San Carlos de Matanzas, which, in 1827, contained
00 inhabitants. To this intendencia belongs the isla de
Pinos, more than 900 square miles in extent, with a
ntain on it rising to more than 3000 feet high. It
ains from 200 to 300 inhabitants; and fine forests, in
h much mahogany is cut.

. The *Central Intendencia* contained, in 1827, 246
tations of sugar, 135 of coffee, and 605,000 head of
e. It is the most fertile portion of the island, especially
country round the town of Santo Espiritu, and has
tly increased in population and agriculture since the
s have been opened to foreign commerce. The most
lous places are inland, namely, Santa Clara, with
inhabitants (in 1827), and Santo Espiritu, with 10,800.
capital Santa Maria de Puerto Principe is also at
distance from the shore, but carries on a considerable
merce by means of its port Nuevitas. It contained, in
, 49,000 inhabitants: it is the seat of the supreme
t of justice for all the Spanish colonies in America.
des, there is on the northern coast the harbour of San
a de los Remedios, with 5200 inhabitants (in 1827),
on the southern, Trinidad de Cuba, with 12,500, and
nandina de Xagua.

I. The *Eastern Intendencia* contained, in 1827, 305
tations of sugar, 725 of coffee, and 105,000 head of
le. Santiago de Cuba, the antient capital, has a good
our and 26,000 inhabitants. There are also three other
ours, which are much frequented by vessels, Man-
llo, north-east of the Cabo de Cruz, Baracoa, near Cabo

Maysi, and Gibara, farther west. The last is the port of Holguin, a small town in the interior.

Commerce.—In few countries has commerce increased so rapidly as in Cuba. About 1780, the exportation of its own produce amounted to little more than two millions of Spanish dollars in value: in the three years from 1831 to 1833, the average value of all goods exported had risen to between 13 and 14 millions, though in some parts a considerable smuggling trade was carried on. This increase has of late been considerable, since (in 1816) the vessels of all nations have been admitted into the ports. Though Havanna is by far the most important trading town, other places carry on a considerable commerce, as the following table shows.

PORTS.	TONNAGE OF VESSELS.			
	Inwards.		Outwards.	
	1828.	1829.	1828.	1829.
Havanna . . .	169,889	153,834	136,259	144,487
Santiago de Cuba . .	33,376	31,734	32,209	24,876
Puerto Principe . .	4,285	5,297	3,479	5,136
Matanzas . . .	35,523	31,331	30,151	29,770
Trinidad . . .	18,291	18,885	17,616	17,009
Barawa . . .	1,267	1,431	917	1,100
Gibara	1,869	2,139	1,272	2,022
Xagua . . .	2,454	1,426	1,929	1,468
Manzanillo . . .	8,112	3,194	5,996	2,882
	277,066	249,253	229,830	228,750

The chief articles of importation are provisions, particularly flour, rice and maize, butter, cheese, candles, and tallow, tasajo and hams, and salted fish and cod. Brandy and the wines of Spain, France, Portugal, and Germany also form a considerable branch of importation. As Cuba has no manufactures, cotton stuffs, woollen goods, linens, hardwares, and silk stuffs are imported to a large amount.

The course and amount, stated in English money, of the trade of Cuba, in the three years which ended with 1833, will be seen from the following table.

	1831.		1832.		1833.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	£.	£.	£.	£.	£.	£.
Spain	1,045,185	642,583	911,086	606,362	836,243	565,317
Former Spanish Colonies . . .	380,394	151,528	662,207	206,958	385,183	269,524
Hanse Towns	354,649	396,013	387,251	438,432	196,325	313,356
United States of America . . .	977,147	816,998	738,319	647,596	929,481	913,934
France	139,500	91,987	167,880	75,208	193,327	110,691
England	205,403	326,608	262,085	437,851	338,577	189,787
Italy	4,719	91,011	7,425	77,317	10,755	47,640
Netherlands	22,194	59,877	61,331	101,316	42,417	55,681
Portugal	5,817	1,376	10,983	4,677	9,401	4,548
Russia	. .	99,777	. .	223,433	10,971	207,335
Sweden and Denmark	4,298	8,609	7,050	12,879	7,138	15,867
Turkey	. .	5,120	. .	255	. .	13,833
£.	3,239,306	2,091,487	3,215,617	2,832,278	2,959,818	2,707,513

he imports in 1833 consisted of,—

and flour, salted meat and fish, butter and cheese . .	£. 1,328,586
spirits, beer, and oil	329,202
and dried fruits	47,038
and hard wares	177,484
, linen, woollen, and silk goods	903,534

e remaining value being made up of timber, glass,
henware, cordage, and various other less important
les.

e quantities exported, during the three years above-
tioned, of various articles, the produce of the island,
as under:—

		1831.	1832.	1833.
r	Cwt.	1,592,272	1,692,726	1,701,909
. . .	Pipes	3,838	3,429	3,227
sses . .	"	83,001	100,178	95,768
e	Cwt.	475,576	457,341	572,848
. . . .	"	6,663	6,741	9,271
Tobacco . .	lbs.	2,936,350	1,910,750	2,311,875
rs	"	8,285,975	11,203,075	15,442,825
a . . .	"	685,900	736,950	551,800
s . . .	"	120,425	36,250	99,250
ogany . .	Feet	46,707	53,844	40,411
r . . .	"	25,932	25,833	29,367
s . . .	Number	16,893	16,317	28,917
erves .	Cwt.	679	524	469
. . .	Value in £.	6,170	5,468	3,078
ry . . .	Pipes	1,063	2,003	2,134
es and Mules .	Number	1,306	1,079	807
r Produce .	Value in £.	9,137	9,169	9,978

he number of vessels and their tonnage, belonging to
rent countries, which entered the port of Havanna in
same three years, were:—

	1831.		1832.		1833.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Spanish . .	334	41,758	325	38,637	379	46,247
American .	496	85,105	489	84,958	509	91,625
Hanse Towns	25	4,226	34	6,344	26	4,500
Danish . .	8	1,078	12	2,313	10	1,729
French . .	19	3,975	18	4,067	48	10,163
Netherlands .	3	1,068	26	4,764	8	1,477
English . .	54	6,403	69	12,558	46	9,067
Portuguese .	2	142	4	548	5	494
Prussian . .	2	294	1	221	1	290
Sardinian .	4	763	1	222	6	939
Swedish . .	1	280	1	280	6	1,061
Hanoverian .	. .	. .	1	256	2	366
Tuscan . .	. .	. .	1	194	. .	. .
Mecklenburgh	. .	. .	. .	. .	1	159
Russian . .	. .	. .	. .	. .	1	176
Total .	953	145,092	982	155,362	1,048	168,293

The English have not so large a share in the commerce of Cuba as in that of some other commercial countries, which may be attributed to their not admitting the productions of Cuba into their ports on the same terms as those of their own colonies, and to their not being able to satisfy the demand of the island for provisions. The Americans have obtained the greatest share of this commerce, being able to supply provisions in abundance, furnishing a ready market for all the exports of Cuba, and having also the advantage of being near Spain, being now deprived of all her colonies on the continent of America, endeavours to turn to advantage her possession of Cuba, to which she sends her wines, oil, and fruits. England, with its numerous manufactured goods and the productions of the East Indies, comes next. England takes in return tobacco, coffee, and sugar. The Hanseatic towns of Germany also have come in for a share of the trade, finding no place more advantageous for exchanging their manufactured goods (linens, paper, glass, &c.), for sugar, coffee, and tobacco. France sends great quantities of wines and some manufactured goods; and Italy oil, olives, and fruits.

The internal traffic is much impeded by the badness of the roads, which for a part of the year are impassable; but the coasting-trade is active, four thousand small vessels being used to bring the produce of the neighbourhood to the Havanna alone.

The political importance of Cuba does not rest on its extent and productions alone, but principally on its position with respect to the common routes of navigation. This route is marked out by the trade-winds and the Gulf Stream. Vessels returning to Europe from Jamaica, or the coast of South America, by sailing directly eastward, have to contend against the united force of winds and current, and are scarcely able to make either the Windward or Mona Passages, which are situated respectively at the western and eastern extremities of the island of Hayti. They are therefore under the necessity of doubling Cabo San Antonio and proceeding to Europe by the Gulf Stream. Thus the possession of Cuba gives an absolute control over the trade between Europe and all countries lying about the Caribbee Sea and the Gulf of Mexico, and consequently a great portion of the United States of America. The maritime powers, at present, seem to have come to a tacit agreement to leave Spain in the possession of Cuba, because, being the least powerful of them all, there seem to be no apprehensions of any attempts on her part to interrupt the free navigation of these seas.

Cuba was discovered by Columbus on his first voyage in 1493; in 1511 the Spaniards formed the first settlement: since that time the island has remained in their possession. In 1762 the English took the Havanna, but it was restored to Spain by the peace of 1763.

(Humboldt; *Present State of Columbia by an Officer; Map of the Society for the Diffusion of Useful Knowledge*; see also *Breve Idea de la Administracion del Commercio y de las Rentas y Gastos de la Isla de Cuba durante los Annos de* 1826 *á* 1834, par D. Ramon de la Sagra, Paris, 1836.)

CUBE (κύβος), a solid figure contained by six equal squares; a box of equal length, breadth, and depth.

Owing to its being the most simple of solids, the cube is the measuring unit of solid content, as the square is that of superficial content, or area. Whatever the unit of length may be, the unit of solidity is the cube which is a unit every way: thus we have the cubic inch, the cubic foot, &c.

Cubes of different sides are to one another as the algebraical third powers of the number of units in their sides: thus cubes which are as 7 to 10 in their sides are as $7 \times 7 \times 7$ to $10 \times 10 \times 10$ in their contents. Hence the algebraical third powers are called cubes: thus $a \times a \times a$ is called the *cube* of a. [NOTATION]. If the side of a cube contain a units, the content is $a \times a \times a$ cubical units of the same kind.

The cube has no *remarkable* properties, for our eyes are so used to the figure, that its properties seem self-evident.

Its internal diagonals are found by multiplying the number of units in the side by $\sqrt{3}$, or (very nearly) by adding one half and one half of one half, and subtracting one per cent. of the result, and if still further accuracy be required, 5 for every 10,000 units:—

```
2)10000  subtract 5 presently.
2) 5000
   2500
  -----
  17500
    175
  -----
  17325
      5
  -----
  17320  feet in the diagonal
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which is about six inches too small.

For the celebrated historical problem connected with this article, see DUPLICATION OF THE CUBE.

CUBEBS. [PIPER.]

CUBIT, a measure of length in use among the antients, and more especially among the Jews. The Hebrews called it אמה (*amma*), as the mother of other measures; the Greeks Πῆχυς (*péchus*); the Romans *Cubitus*, a word apparently formed from the verb 'cubo,' to bend for the purpose of lying down. The cubit was originally the distance from the joint or bending of the elbow to the extremity of the middle finger. Bishop Cumberland and Pelletier fix the Hebrew cubit at twenty-one inches; but it is more usually considered as a foot and a half.

The best authorities assert that there were two cubits in use among the Hebrews; one sacred, the other common. In Deuteronomy, chap. iii. v. 11, the bed of Og is said to be nine cubits long and four broad, *after the cubit of a man*. In Ezekiel, chap. xl. v. 5 and xliii. 13, we find the cubit for measuring the temple was *a cubit and a hand-breadth*; whence it appears that the larger cubit was longer than the common one by a hand-breadth, or three inches. Thus we may reconcile the two lengths of eighteen and twenty one inches already specified. Calmet, however, is persuaded, that from the Exodus to the Babylonish captivity, there was but one cubit in use among the Hebrews, and that it was the Egyptian cubit. He says it is only *after* the captivity that Scripture notices two sorts of measures, to distinguish the old Hebrew cubit from that of Babylon, which the captives used during their abode in that city. On this, he adds, is grounded the precaution of Ezekiel, in observing that the cubit he is speaking of is the true old cubit, larger by a hand's breadth than the common cubit. Among the Greeks the cubit (*péchus*) was twenty-four fingers (δάκτυλοι), measured as already explained. See Herodotus, ii. 175. (Arbuthnot, *Tables of Coins, Weights, &c.*, and Calmet's *Dict. of the Holy Bible*, in voce.)

CUCKFIELD. [SUSSEX.]

CUCKOO. [CUCULIDÆ; CUCULINÆ.]

CUCU'LIDÆ (Cuckoos, Cuckoo-tribe), a family of scansorial birds, placed by Cuvier and Lesson next to the wrynecks, *Yunx*, and by Mr. Vigors in the aberrant group of his *Scansores*, between the *Certhiadæ* and the *Rhamphastidæ*. This aberrant group he characterizes as consisting of birds which have either three anterior toes and one posterior scansorial one, or zygodactyle but not retractile toes. M. Lesson arranges the following genera; *Cuculus, Coccyzus, Saurothera, Centropus, Leptosomus, Eudynamis, Indicator*, and *Monasa* under the family, whilst he places *Phænicophaus, Scythrops*, and *Crotophaga* under his succeeding family, *Les Hétéroramphes*. The *Cuculidæ* seem to have presented a good deal of difficulty to ornithologists. 'Neither do I wish,' observes Mr. Vigors in his paper on the natural affinities that connect the orders and families of birds, 'to dwell with any particularity on the succeeding family of *Cuculidæ*, the various and extensive genera of which are as yet but little understood as far as regards their natural affinities. The Linnean genus, *Cuculus*, indeed, as at present constituted, forms an extremely artificial group. There is much to be done with respect to these birds, and they would form an interesting subject for the researches of an ornithologist who might have leisure and opportunity to describe their living, manners, and economy. I shall only now observe, with respect to external character, that some genera of the family are associated with the true *Cuculus* by their curved and slender bill; others like *Indicator*, Vieill., have a shorter and stronger bill; while *Saurothera*, Vieill., by its serrated bill, evinces an approaching conformity to the *Ramphastidæ*, and a considerable number, such as *Centropus*, Ill., *Phænicophaus*, Vieill., and *Crotophaga*, Linn., indicate the same affinity by the gradual increase of the bill in length and size. The last-mentioned genus, it may also be added, bears a relation, through the medium of *Scythrops*, to the *Hornbills*; some species of that family, and one more particularly lately discovered' (*Buceros Leadbeateri*) 'in the interior of Africa, possessing, though with gigantic dimensions, the exact bill of the Ani.' [CROTOPHAGA.]

The examination here suggested by Mr. Vigors has been undertaken by Mr. Swainson, and we find in the third and fifth parts of the 'Magazine of Zoology and Botany,' two memoirs by the last-named zoologist 'on the natural history and relations of the family of cuculidæ or cuckoos, with a view to determine the series of their variation.'* The *Cuculidæ* are placed by Mr. Swainson also between the *Certhiadæ* and *Ramphastidæ*, and these three families constitute what he terms his third and aberrant circle of the scansores. The following is his definition of the family character. Feet not strictly scansorial, very short, nostrils naked, tail covers remarkably long; and he separates the group into the following subfamilies: *Cuculinæ*, *Coccyzinæ*, *Saurotherinæ*, *Opisthocominæ*, *Indicatorinæ*. Of the first subfamily *Cuculus*, Linn., is the type; of the second *Coccyzus*, Vieill.; of the third *Saurothera*, Vieill.; of the fourth *Opisthocomus*, Hoff.; and of the fifth *Indicator*, Sparrm.

Habits, &c.—The following account bears the stamp of actual observation, and we therefore select it. 'So faintly is the scansorial structure indicated in these birds,' says Mr. Swainson in his memoirs above alluded to, 'that but for their natural habits, joined to the position of their toes, we should not suspect they were so intimately connected with the more typical groups of the tribe as they undoubtedly are. They neither use their bill for climbing, like the parrots, or for making holes in trees, like the woodpeckers, neither can they mount the perpendicular stems, like the certhiadæ or creepers; and yet they decidedly climb, although in a manner peculiar to themselves. Having frequently seen different species of the Brazilian cuckoos (forming part of the genus *Coccyzus*) in their native forests, I may safely affirm that they climb in all other directions than that of the perpendicular. Their flight is so feeble, from the extreme shortness of their wings, that it is evidently performed with difficulty, and it is never exercised but to convey them from one tree to another, and these flights in the thickly-wooded tracts of tropical America are of course very short: they alight upon the highest boughs, and immediately begin to explore the horizontal and slanting ramifications with the greatest assiduity, threading the most tangled mazes and leaving none unexamined. All soft insects inhabiting such situations laying (lying?) in their route become their prey, and the quantities that are thus destroyed must be very great. In passing from one bough to another they simply hop, without using their wings, and their motions are so quick, that an unpractised observer, even if placed immediately beneath the tree, would soon lose sight of the bird. The Brazilian hunters give to their cuckoos the general name of *Cat's-tail;* nor is the epithet inappropriate, for their long hanging tails, no less than their mode of climbing the branches, give them some distant resemblance to that quadruped. I have no doubt that the great length of tail possessed by nearly all the cuckoos is given to them as a sort of balance, just as a rope-dancer, with such an instrument in his hands, preserves his footing when otherwise he would assuredly fall. Remote therefore as the cuckoos unquestionably are from the typical *Scansores*, we yet find the functions of the tail contributing to that office, although in a very different mode to that which it performs among the woodpeckers, the parrots, and the creepers. The structure of the feet, as before observed, is the only circumstance which would lead an ornithologist to place these birds among the climbers, supposing he was entirely unacquainted with their natural history properly so called, or with their close affinity to the more perfect *Scansores*. The toes indeed are placed in pairs; that is, two directed forward and two apparently backward; but a closer inspection will show that the latter are not strictly posterior, and that they differ so very materially from those of the *Picidæ* (the pre-eminently typical family of the climbers), as clearly to indicate a different use. The organization of the external posterior toe of all the woodpeckers, parrots, and toucans, renders it incapable of being brought forward, even in the slightest degree; whereas in the cuckoos this toe can be made to form a right angle with that which is next it in front, from which circumstance it has been termed *versatile:* this term however is not strictly correct, inasmuch as the toe cannot be brought more than half way *forward*, although it can be placed entirely backward. Now this form, which is obviously the least developed state of the scansorial structure, accords exactly with the rank of the family, which is that of the most aberrant group in the circle, and farthest removed from the type. The cuckoos in fact are half-perching half-climbing birds, not only in their feet, but, as we have seen, in their manners. No one, from seeing them alive, would suppose they were truly scansorial birds; and yet it is highly probable that this singular power of varying the position of one of their toes, gives them that quickness of motion and firmness of holding which accompanies the habit just mentioned.'

'There is another circumstance in the history of this family of birds, which, with one solitary exception, is altogether peculiar, as they contain the only parasitic birds yet known. This term indeed has been applied, I think improperly, to other genera, which, like the frigate pelicans, the jagers, and some of the eagles, rob other birds of their food; but this is a mere act of thieving, for all these feathered robbers can, and do, habitually depend just as much upon their own industry in procuring food. But with the typical cuckoos the case is far different, for by depositing their eggs in the nests of other birds, to whom they leave the care of hatching their young and feeding them afterwards, they become as truly parasitic as any of the *Acari* or *Pediculi;* they fasten themselves, as it were, on the living animal, whose animal heat brings their young into life, whose food they alone live upon, and whose death would cause theirs during the period of infancy. Such only is a parasitic animal, and such only, among birds, belong to the typical cuckoos and their representative, the *Molothrus pecoris*.'* [CUCULINÆ, MOLOTHRUS.]

Geographical Distribution and Food.—Warm and temperate climates are the chosen haunts of the cuckoos. The European species—there are but two—never show themselves in our quarter of the globe, except in the warm weather, quitting it upon the first approaches of a colder temperature. 'So congenial is warmth to their nature,' says Mr. Swainson in the memoirs last quoted, 'that even the mild temperature of an Italian winter is not sufficient to retard their return to the sultry groves of Northern Africa. There is a fact regarding their structure, which appears connected with this susceptibility of cold, and which I believe has not hitherto been noticed. All the cuckoos, both of the old and the new world, which I have had the opportunity of dissecting, are remarkable for the thinness and delicacy of their skins, so much so indeed as to render their preservation in an entire state extremely difficult to inexperienced hands. Every one who has skinned the common British species must doubtless have observed this. On the other hand, as if to compensate for the delicacy of the cuticle, the feathers, more especially upon the back and rump, are unusually thick-set and compact.'

Tropical countries, and those which approach the equator, afford the greatest number of species.

The food of the cuckoos, as might be expected from this geographical distribution, consists principally of soft fruits and soft insects, especially the latter, and more particularly when they are in the larva state.

GUCULI'NÆ, Mr. Swainson's name for that subfamily of the CUCULIDÆ, which consists of the genuine Cuckoos.

Character of the subfamily.—*Bill* wider at the base than it is high, rather suddenly contracted behind the nostrils and becoming compressed; upper mandible slightly sinuous at the tip, so as to assume the form of the dentirostral notch. *Wings* considerably long, nearly reaching to two-thirds the length of the tail, and so far pointed as to diminish rapidly in length beyond the fourth quill. *Feet* remarkably short; tarsus thickly clothed with feathers, for nearly half its length, not longer than the hallux or true hind toe. Upper cover feathers of the tail thick set, narrow, generally pointed, and comparatively elongated, and in rigidity only comparable to those of the *Ceblepyrinæ*, the corresponding type in the *Laniadæ*. (Swainson, *Mag. of Zoology and Botany*.)

'Popular interest,' adds Mr. Swainson, 'has been so much confined to the parasitic habits of the cuckoo, that upon many other points of its economy we are still in comparative ignorance. Hence it is, that we cannot trace, so fully as could be wished, the influence which the structure just described exercises upon the habits and manners of such birds as possess it. We know, however, that all the genuine cuckoos fly with strength and rapidity. Most of them, in fact, are migratory birds. . . . . The form of the nostrils in the typical cuckoos is very peculiar, and I believe that future observations will shew this structure to be intimately connected with their parasitic habits. The nests of those species in which the cuckoo deposits its eggs, we all know, are built in the thickest and most central part of trees and bushes, to discover which, superior powers of smell have been given to the Toucans (which feed upon the eggs or young), and, in a less degree, are probably conferred upon the cuckoos, to facilitate their search after a foster parent for their young. How far this idea may be correct, future observations will determine. Certain however it is, that this peculiar-shaped nostril is restricted to such cuckoos as are parasitic, for the whole of the *Coccyzinæ* have the aperture of a lengthened oval shape, or in the form of a slit, and all we know of these birds sanctions the idea that they are not parasitic. The shortness of the feet, in the typical cuckoos, is another important distinction, and leads to the belief that these members are much less used than those of the *Coccyzinæ*, whose habits we have already mentioned when alluding to the cuckoos of South America, all of which are excluded from the group now under consideration.'

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* October 1836, and February 1837.

* Cow Bunting

Genera. Cuculus.

Bill broad at the base, compressed beyond, the upper mandible obsoletely notched; *nostrils* circular, with a tumid margin; *wings* long, pointed, the third quill longest, the second and fourth of equal length; *feet* slender, very short, tarsi feathered posteriorly almost to the toes; *rump* and *upper tail-covers* long, thick-set, and rigid. Inhabits the old world; parasitic. (Swainson). Type, *Cuculus canorus*.

Description.—Male. Length about fourteen inches, weight about four ounces and a half. Bill black, yellowish at the base of the upper mandible; inside of mouth red. Irides yellow. Head, and whole upper part of the bird, dark ash-colour. Throat, under side of the neck, and upper part of breast pale ash, the latter sometimes inclining to rufous brown; lower part of breast and belly white, with transverse undulating black lines. Quills dusky, inner webs barred with white oval spots. Tail-feathers ten, of unequal length; two middle ones black, dashed with ash and tipped with white, the rest black with white spots on each side of the shaft. The lateral feathers in some have white spots only on the interior webs, but all are tipped with white.

Female, rather less than male, and differing from him generally in the neck and breast being of a tawnyish brown, barred with dusky, and the coverts of the wings marked with light ferruginous spots. Tail-feathers and quills much like those of the male, but the edges of the spots incline to reddish brown. Legs in both sexes short and yellow. Outer tail-feather and first quill remarkably short.

Young.—So distinct in its plumage from the adult that it has been described as a distinct species (*Cuculus rufus*, Bris.). It is supposed not to throw off its nestling feathers till the second year's moulting, for it is stated in Montagu's Dictionary (last edit.), that in three specimens killed the same season (two males and a female), the thirteenth and three succeeding quill feathers, and the three greater coverts impending them, are barred with brown and ferruginous. In the first year the irides are greyish; the whole upper plumage is a mixture of dusky black and ferruginous, in transverse bars, except the forehead and a patch on the back of the head, which in this specimen described in Montagu was white, and the tips of the scapulars pale; the feathers of the whole under parts sullied white with distant transverse bars of dusky black. In general each feather is barred twice or thrice. The sides of the neck and breast are tinged with rufous; lateral tail-feathers and inner webs of the quills more or less barred with white. Tail coverts, which, as well as the feathers on the rump, are unusually long, dashed with cinereous and slightly tipped with white.

This well known bird is the κόκκυξ of the Greeks; *Cuculus* and *Coccyx* of the Latins; *Cucculo, Cucco, Cuco, Cucho, Cuccù* of the modern Italians; *Cocou, Coucou, Coqu*, of the French; *Kukuk* and *Kuckuck* of the Germans; *Gjok* of the Fauna Suecica; *Gjoeg* of the Danes; *Gouk* of the Norwegians; *Cog* of the antient British; *Gowk* and *Cuckoo* of the modern British.

Habits.—The common cuckoo arrives in this country early in spring. In White's 'Naturalist's Calendar,' the cuckoo is noted as first heard April 7—26, and in Markwick's, April 15, May 3, last heard June 28. By the first of July it has almost always taken its departure, but it is sometimes later. Mr. Swainson in his memoir on the *Cuculidæ* says, 'The common species comes to us every spring, from northern Africa or Asia Minor, and returns in Autumn. This we know from personal observation; for vast numbers arrive in the spring in Sicily and Naples, in company with the bee-eaters, orioles, hoopoes, and other migratory birds; but after remaining a short time, they appear to direct their flight northward, from whence they return in August and September.' Speaking of the *food*, the same author observes, 'The English cuckoo, no doubt, searches for its food among foliage, but its nature is so shy, that we have never been fortunate enough to witness its mode of feeding.' Montagu, however, one of the best authorities we can cite, says, that its principal food consists of caterpillars, so that it not only possesses the general cast of colours, and much of the structure of its prototypes, the *Ceblepyrinæ*, but actually feeds on the same description of insects.' The Editor of the Magazine of Zoology and Botany, adds, 'In an open and muirland district where the cuckoo is very common, we have always found, during May and June, that their stomachs were filled with the remains of caterpillars which fed on the various plants frequent in such localities. Among them those of the *Lasiocampæ* formed a great proportion, and hairy species seem to be preferred.' White in his 'History of Selborne,' thus writes: 'In July, I saw several cuckoos skimming over a large pond; and found, after some observation, that they were feeding on the *libellulæ*, or *dragon-flies*; some of which they caught as they settled on the weeds, and some as they were on the wing.' The following narrative from the last edition of Montagu's Dictionary will throw some light on this part of the subject: 'A young cuckoo, brought to Colonel Montagu in the month of July, just as it could fly, was, by great care, kept alive till the fourteenth of December. It had, during that time, two or three attacks of dysentery, from which it recovered by having chalk and ginger given to it; and during the time it lived no change was observed to have taken place in its plumage. For two months after this bird was caught, it never attempted to feed itself by picking; and even to the last moment seemed to prefer being fed by the hand of its mistress, rather than have the trouble of picking up its food, of which it was extremely choice. Nothing appeared to be acceptable as a substitute for insects except raw beef. Flies it would eagerly devour; but its most delicious morsel was any species of hairy caterpillar; these it seized with avidity, shook them to death, and softened by passing several times through the bill, till they were perfectly pliant, when it would swallow whole the largest of the caterpillars of the egger* or drinker† moths. Of strangers it was extremely fearful, fluttering in its cage to avoid their attentions; but it would quietly suffer itself to be handled and caressed by a young lady who had been its kind benefactress, appearing to like the warmth of her hand to its feet.'

It is the habit of the cuckoo in depositing her egg in the nest of another bird, that has made it so much an object of curiosity. Many strange stories were formerly rife on this custom, which can hardly be called abandonment, as the nest of a bird that feeds its young with insects is always selected. Among others, the hedge-sparrow, the reed-sparrow, the tit-lark, the water-wagtail, the yellow-hammer, &c., have been recorded as the birds to whom the egg has been committed, but the first seems to be most frequently chosen. White saw one hatched in the nest of the tit-lark. The nests of the green-bird, the linnet, the white-throat, and even of the wren have been mentioned as the places of deposit. Dr. Jenner's celebrated paper in the Philosophical Transactions threw great light on this subject, and many other observers have corroborated in general that author's remarks. Some indeed, and among them Dr. Fleming, have declared that in some cases the cuckoo constructs its own nest, but there can be little doubt that there is no foundation for this assertion, and as little that the nests and young supposed to be those of the cuckoo on such occasions were those of the goatsucker. Whether the bird actually deposits the egg from her body while sitting on the nest has been doubted, and if the case of the deposit of one in a wren's nest be a fact, it is almost conclusive that she does not so deposit it in all cases, for the aperture of the wren's nest is in the side, and not more than big enough to admit the wren. On this part of the subject, and indeed on every part of it, the reader will find much valuable information in the last edition of Montagu's Dictionary. He should also refer to the paper of Dr. Jenner above alluded to, and to that of Mr. Blackwall, in the fourth volume of the Zoological Journal. Our limits will not allow us to give our readers more than a brief notice of the way in which the intruder, when hatched, gets rid of the legitimate contents of the nest, and we select the following. 'Previous to the above-mentioned publication' (Dr. Jenner's) 'I had taken much pains towards investigating the several phœnomena I had noticed in this bird, and was so fortunate as to have ocular proof of the fact, related by Dr. Jenner, of a young cuckoo turning out of a hedge-sparrow's nest a young swallow I had put in for the purpose of experiment. It is needless to recite all the circumstances attending this extraordinary bird, as that gentleman has so amply explained it; I shall, therefore, only add, that I first saw it when a few days old, in the hedge-sparrow's nest, in a garden close to a cottage, the owner of which assured me the hedge-sparrow had four eggs, when the cuckoo dropped in a fifth; that on the morning the young cuckoo was hatched, two young hedge-sparrows were also excluded; and that, on his return from work in the evening, nothing was left in the nest but the cuckoo. At five or six days old, I took it to my house, when I frequently saw it throw out the young swallow for four or five days after. This singular action was performed by insinuating itself under the swallow, and, with its rump, forcing it out of the nest with a sort of jerk. Sometimes, indeed, it failed, after much struggling, by reason of the strength of the swallow, which was nearly full feathered: but, after a small respite from the seeming fatigue, it renewed its efforts, and seemed continually restless till it succeeded. At the end of the fifth day, this disposition ceased, and it suffered the swallow to remain in the nest unmolested.' This wonderful instinct is absolutely necessary for the self-preservation of the young cuckoo, which, if it did not dispose of all other claimants on the affection of the parents, must perish for want, and, as it is, the poor little birds to whose lot it falls to supply the demands of their craving and gigantic nestling, have a weary time of it. Indeed, there are well recorded instances, of their being assisted by others of their own species, and by other insectivorous birds.

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* Lasiocampa Quercus.

† Odonestis potatoria.

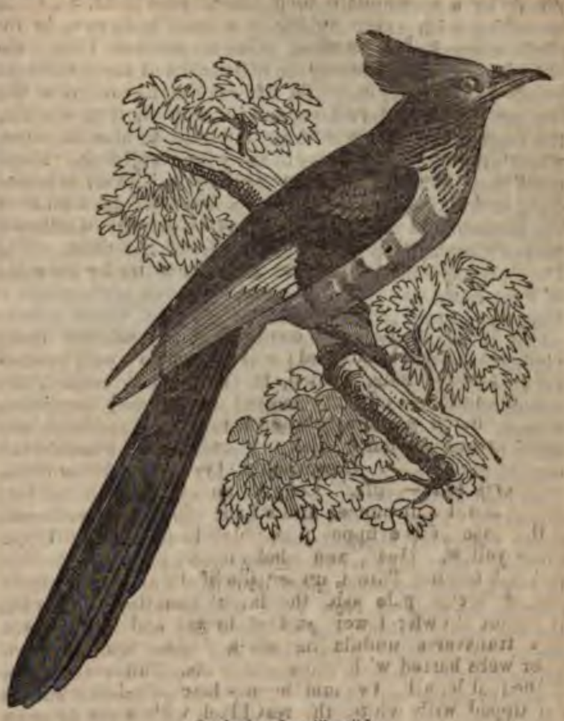
The Romans considered the cuckoo excellent eating. Pliny (Lib. x. c. 9.) says that no bird can be compared to it for sweetness of flesh.

[Cuculus canorus, male.]

Oxylophus, Sw.

Bill slender, considerably compressed nearly its whole length; upper mandible entire; *nostrils* ovately round; *head* crested; *wings* moderate, pointed, shorter than the tail-covers, the *fourth quill* longest; *tarsi* moderate, naked; upper *tail-covers* long but not rigid. Inhabits the Old World; parasitic. Type, *Oxylophus Levaillantii.*

Description. Head crested, the feathers pointed; plumage above, black glossed with green; band at the base of the quills, end of the tail, and under parts of the body white; throat striped with black. Wings long but rounded, fifth quill longest. Total length fifteen inches. Mr. Swainson, whose description we have given, says that, unlike the true cuckoos, these birds rear and provide for their young in the ordinary manner. *Locality,* Senegal and the western coast of Africa.



[Oxylophus Levaillantii.]

Erythrophrys, Sw.

Bill as in *Oxylophus; head* not crested; *nostrils* oval; *wings* lengthened, pointed, extending beyond the tail-covers, the third *quill* longest, the second much shorter than the fourth; *tarsi* moderate, naked. Inhabits the New World, and rear their own young. Type, *Cuculus Carolinensis,* Wilson. (Swainson.)

Description. Male. Bill as long as the head, compressed, slightly arched, acute, scarcely more robust than in many *Sylviæ;* upper mandible carinated above, its margins acute and entire; lower mandible carinated beneath, acute. Nostrils basal, lateral, linear-elliptical, half closed by a membrane. Feet short, tarsus scutellate before and behind; toes two before, separated; two behind, one of which is versatile, the sole flat; claws slender, compressed, arched. Plumage blended, slightly glossed. Wings long, the first quill short, the third longest, the primaries tapering. Tail long, graduated, of ten feathers, which are rather narrow and rounded. Upper mandible brownish-black, yellow on the margin towards the base; under mandible yellow. Iris hazel. Feet greyish-blue. The general colour of the upper parts, including the wing-coverts and two middle tail-feathers, is light greenish-brown, deeper anteriorly. Primary quills with the inner webs brownish-orange. Tail-feathers, excepting the two middle ones, black, the next two entirely black, the rest broadly tipped with white, the outermost white on the outer web. The under parts are greyish-white. Length 12½ inches, extent of wings 16; bill along the ridge 1, along the gap 1¼.

The *female* differs very little from the male in colouring. (Audubon.)

Habits, &c. The author whose specific description we have given above, thus graphically describes the habits of the yellow-billed Cuckoo, *Cuculus Carolinensis* of Wilson, *Coccyzus Americanus* of the prince of Musignano, *Cuculus Americanus* of Linnæus, and *Carolina Cookoo* of Latham. 'The flight of the bird is rapid, silent, and horizontal, as it moves from one tree to another, or across a field or river, and is generally continued amongst the branches of the trees in our woods. When making its way among the branches, it occasionally inclines the body to either side, so as alternately to show its whole upper or under parts. During its southward migration, it flies high in the air, and in such loose flocks that the birds might seem to follow each other, instead of their keeping company together. On the other hand, early in March, the greater number enter our southern boundaries singly, the males arriving first, and the females a few weeks after. They do not fly in a continued line, but in a broad front, as, while travelling with great rapidity in a steam-boat, so as to include a range of a hundred miles in one day, I have observed this cuckoo crossing the Mississippi at many different points on the same day. At this season they resort to the deepest shades of the forests, and intimate their presence by the frequent repetition of their dull and unmusical notes, which are not unlike those of the young bull-frog. These notes may be represented by the word *cow, cow,* repeated eight or ten times with increasing rapidity. In fact, from the resemblance of its notes to that word, this Cuckoo is named *Cow Bird* in nearly every part of the union. The Dutch farmers of Pennsylvania know it better by the name of *Rain-crow,* and in Louisiana the French settlers call it *Coucou.* It robs smaller birds of their eggs, which it sucks on all occasions, and is cowardly and shy without being vigilant. On this latter account it often falls a prey to several species of Hawks, of which the Pigeon-Hawk (*Falco columbarius*) may be considered as its most dangerous enemy. It prefers the southern states for its residence, and when very mild winters occur in Louisiana, some individuals remain there, not finding it necessary to go farther south. This bird is not abundant anywhere, and yet is found very far north. I have met with it in all the low grounds and damp places in Massachusetts, along the line of Upper Canada, pretty high on the Mississippi and Arkansas, and in every state between these boundary lines. Its appearance in the state of New York seldom takes place before the beginning of May, and at Green Bay not until the middle of that month. A pair here and there seem to appropriate certain tracts to themselves, where they rear their young in peace and plenty. They feed on insects, such as caterpillars and butterflies, as well as on berries of many kinds, evincing a special predilection for the mulberry. In autumn they eat many grapes, and I have seen them supporting themselves by a momentary motion of their wings opposite a bunch, as if selecting the ripest, when they would seize it and return to a branch, repeating their visits in this manner until satiated. They now and then descend to the ground to pick up a wood-snail or a beetle. They are extremely awkward at walking, and move in an ambling manner, or leap along sidewise, for which the shortness of their legs is ample excuse. They are seldom seen perched conspicuously on a twig, but on the contrary are generally to be found amongst the thickest boughs and foliage, where they emit their notes until late in autumn, at which time they discontinue them. The nest is simple, flat, composed of a few dry sticks and grass, formed much like that of the common Dove, and like it fastened to a horizontal branch, often within the reach of man, who seldom disturbs it. It makes no particular selection as to situation or the nature of the tree, but settles anywhere indiscriminately. The eggs are four or five, of a rather elongated oval form, and bright-green colour. They rear only one brood in a season, unless the eggs are removed or destroyed. The young are principally fed with insects during the first weeks. Towards autumn they become very fat, and are fit for being eaten, although few persons, excepting the Creoles of Louisiana, shoot them for the table.' (*Ornithological Biography,* vol. i., p. 18.)

[Erythrophrys Americanus.]

Chalcites, Less.

Bill and general structure as in Cuculus. *Plumage* metallic green; upper mandible entire; *nostrils* circular; *wings* pointed, the *third quill* longest, the second much longer than the fourth; *tarsi* very short, almost entirely plumed; *rump* and *upper tail-covers* soft. Inhabits the tropics of the Old World; parasitic. Type, *Cuculus auratus* of authors. (Swainson.)

[Chalcites auratus.]

Of this genus Mr. Swainson says, 'I feel much more scrupulous in adopting the genus *Chalcites,* than in proposing that of *Erythrophrys.* The beautiful little shining cuckoos, indeed, which have thus been detached have altogether the appearance of belonging to a different type from those of the genus *Cuculus;* and this idea is strengthened, when we find there are already four or five species, all distinguished at first sight by their diminutive size and their beautiful golden-green plumage. On the other hand, their actual structure is so completely that of an European group, that I must beg to be understood as being by no means satisfied on the propriety of the separation. For the present, however, I shall adopt this genus, conceiving that these splendid little birds may probably constitute the tenuirostral type of the *Cuculinæ,* in which case they will be analogous to the humming-birds, and nearly all those genera whose plumage is ornamented with metallic colours. The attempt that has been made to define the group by its bill, nostrils, &c., as distinct from the cuckoos is singularly unsuccessful; while those light shades of difference really existing between *Chalcites* and *Cuculus* have been completely overlooked. *Chalcites,* in fact, has the bill, nostrils, feet, and wings of *Cuculus,* with this difference only, that the tip of the upper mandible is without the slightest indication of a notch; the second and third quill are longer than the fourth, and the feathers of the rump and upper tail-covers, instead of being thick-set and rigid, are of the same degree of density and softness as in ordinary birds. We have seen, that, however dissimilar in their appearance the foregoing groups of the *Cuculinæ* may be, yet that the variation of their external structure is but slight. This consideration has much weight with me in the temporary adoption of M. Lesson's genus *Chalcites,* for we have just seen an example in *Erythrophrys,* where there is an equally slight variation in external form, yet a most important one in economy and internal organization.' (*Mag. of Zool. and Bot.*)

Eudynamys, Horsf. and Vig.

trong, thick, the under mandible not curved, and ed beneath; upper mandible entire; *wings* pointed, *th quill* longest; *tarsi* much shorter than the long- the upper part plumed; *rump* and *tail-covers* soft. s the Old World. Type, *Cuculus Orientalis*, of au- (Swainson.)

igors and Dr. Horsfield, who established this genus description of the Australian birds in the collection innæan Society (*Linn. Trans.*, vol. xv. p. 303), ob- at the true *Cuckoos*, or that portion of the family *ulidæ* which constitutes the genus *Cuculus* of is distinguished from the remaining groups of the y the comparative weakness of the bill, in which *es* are small and rounded, and situated on an ele- embrane; by the wings being strongly acuminated, nary quill-feathers considerably exceeding the se- in length; and by the feebleness of the legs and former of which are plumed beneath the knee, generally covered by the feathers. *Eudynamys*, te, deviates from these characters, which may be ed typical in the family, by the greater strength of e members. The bill is powerful, the under man- ore particularly, which is marked by a strong as- *gonys*. The nostrils are wide and oval, and covered the upper part by a membrane. The tarsi and feet icularly strong: the former are much compressed external side, exhibiting by this conformation a lattened surface in front. In many of these par- the group agrees very nearly with the neighbouring *Centropus*, Ill., and *Phænicophaus*, Vieill., which ually been separated from the typical species of the But it may at once be distinguished from *Cen-* y the absence of the lengthened nail to the hallux; ill be seen equally to differ from *Phænicophaus* in ger, shorter, and less arcuated bill, in the wings onger, and the tail rounded, not graduated. The sed formation of the sides of the *tarsi* in *Eudy-* s also wanting in *Phænicophaus*.

ity. The species are widely distributed over the

ple. *Eudynamys Orientalis*, *Cuculus Orientalis*, *Coucou des Indes Orientales*, Enl., 274, fol. i. *Black Cuckoo*, Lath.

[Eudynamys Orientalis.]

iption. Plumage of *male*, of which the above are nyms, black with metallic lustre. Bill yellow.

e. Above shining greenish-brown spotted with ail-feathers banded with white; whitish beneath, sely undulated with greenish-brown. Synonyms. *Mindanensis*, Linn. *Coucou tacheté de Mindanao.* 7. *Mindanao Cuckoo*, Lath. (Vigors and Hors-

'These birds, which now generally are considered the sexes of one species, appear to be but accidental visitors in the colony. At least, Mr. Caley informs us, that he never met with more than two individuals of the male and one of the female. The male specimen in the Society's collection seems to be a young bird changing to the adult plumage. It has several pale ferruginous feathers in the lower parts of the body, and it has a single ferruginous feather streaked with black among the secondary quill-feathers of the right wing, which forms a striking contrast with the deep black of the rest. The corresponding feather on the left wing was lost, as Mr. Caley tells us, by the shot striking the wing. This bird had berries of *Cassytha* in its stomach. The native name of the male is *Cowhat*, of the female, *Bellinging*.' (Vigors and Horsfield.)

'All the cuckoos I have yet seen,' says Mr. Swainson in his memoirs on the *Cuculidæ*, 'with more or less pointed wings, and circular nostrils, and whose habits are parasitic, will arrange themselves under one or other of the foregoing genera. Nor are there wanting considerations, drawn from their analogical resemblances in other groups, which render it highly probable that they serve to indicate a circular group. *Erythrophrys*, as the rasorial type, resembles the rufous-winged scansorial creeper; and as it is by this group that the parasitic cuckoos lead immediately to those which build nests, so we have the external characters of *Oxylophus* joined to the economy of *Coccyzus*. *Chalcites*, again, as representing the humming-birds, may be viewed as the tenuirostral type; while *Eudynamys*, with its large bill, and black glossy plumage, will become the representative of the Toucans, and of the fissirostral type. It may be questioned, indeed, whether *Cuculus* or *Oxylophus* follows *Eudynamys*; but I incline to the series in which they are here placed, from the obvious affinity of *Erythrophrys* to *Oxylophus*.' (*Mag. of Zool. and Bot.*)

Mr. Swainson promises a similar exposition of the remaining divisions, and we shall notice the other sub-families on their appearance in their alphabetical order, with the exception of the *Coccyzinæ*, which will be found in the article INDICATORINÆ.

CUCULLÆA. [POLYODONTA.]

CUCUMBER, a kind of trailing annual, whose unripe fruit is used for salads and pickles. [CUCUMIS.] Every gardener knows so much of the cultivation of this plant as to render any general description of the process unnecessary. We only notice a few points. The finest cucumbers are always obtained from shaded plants growing in a warm damp atmosphere, and therefore growing rapidly; this is exclusively owing to the ordinary action of solar light being prevented. Under bright light, evaporation goes on with great force from the surface of the cucumber plant, the quickness of growth is thus diminished, and the fruit is formed in a more solid manner than it otherwise would be, and thus its delicacy is impaired. The effect of direct light moreover is to cause the production of whatever secretions may be natural to a plant; the natural secretions of the cucumber are bitter; hence, the less cucumbers are exposed to light while growing, the less bitter, and consequently the more delicate they will be. This sufficiently explains the superiority of cucumbers forced quickly at the dull season of the year, to those produced naturally in the open ground in autumn.

When it is an object to procure very fine and long fruit, the plant should not be allowed to bear early; all the female blossoms should be destroyed until the plant has become vigorous, and well rooted in the bed; a fruit set after that time, will grow much faster than one fertilized at an earlier time.

The best sorts of cucumbers are, for gurkens, the *Russian*, for stewing, the *large white Bonneuil*, for large size, the *Longford*; and for ordinary forcing purposes, the black spined *long prickly*, if well saved. A small sort called the *Sandy* cucumber is grown in the fields in some parts of Bedfordshire, but it is altogether inferior to the *Russian*.

CUCUMBER, SPIRTING, the English name of MOMORDICA ELATERIUM.

CU'CUMIS, the cucurbitaceous genus which comprehends the melon, the cucumber, and some sorts of gourd. It is distinguished from the neighbouring genera by its three thick split stigmas, and by the seeds having a thin margin. The fruit is in all cases pulpy internally, many-seeded, and divided into three or six cells when young. The following are the principal species:—

1. *C. Melo.* The melon. The native country of this valuable plant is unknown. Linnæus says Tartary, but his authority is not given, and in all probability is erroneous; De Candoile says Asia; Roxburgh only knew it in a cultivated state in tropical India; and Professor Royle seems unacquainted with any wild station for it in the Himalaya regions. Cashmere is the most likely to be the country whence it sprang; for it seems to be the mother of many of our other cultivated fruits; and has from time immemorial been famous for the excellence and abundance of its melons, which form a staple article of the food of the inhabitants. For the varieties and cultivation of this fruit see MELON, where they are given in some detail; we only here observe that all the melons known in Europe belong to the present species, unless it be the *Winter Melon* and its varieties, and that kind possibly originates from the following species, concerning which we give an extract from the Flora Indica of Roxburgh.

2. *C. utilissimus.* An annual, native of the higher cultivated lands of India, but generally found in a cultivated state. 'The stems exactly as in C. sativus, but not quite so extensive. Tendrils simple, leaves broad-cordate, generally more or less five-lobed; lobes rounded, toothletted; above pretty smooth, below scabrous, the largest generally about six inches each way. Floral leaves of the female flowers sessile, and very small. Male flowers axillary, peduncled, crowded, but opening in succession. Female flowers axillary, peduncled, solitary, both sorts yellow, about an inch or an inch and a half in diameter. Fruit fleshy, generally a very perfect oval; when young, downy and clouded with lighter and darker green; when ripe perfectly smooth, variegated with deeper and lighter yellow; from four to six inches long, and from three to four in diameter. This appears to me to be by far the most useful species of cucumis that I know; when little more than one half grown, the fruits are oblong, and a little downy, in this state they are pickled; when ripe they are about as large as an ostrich's egg, smooth and yellow; when cut they have much the flavour of the melon, and will keep for several months, if carefully gathered without being bruised and hung up; they are also in this state eaten raw, and much used in curries by the natives. The seeds like those of other cucurbitaceous fruits, contain much farinaceous matter blended with a large portion of mild oil; the natives dry and grind them into a meal, which they employ as an article of diet; they also express a mild oil from them, which they use in food and to burn in their lamps. Experience, as well as analogy, proves these seeds to be highly nourishing, and well deserving of a more extensive culture than is bestowed on them at present. The powder of the toasted seeds mixed with sugar is said to be a powerful diuretic, and serviceable in promoting the passage of sand or gravel. As far as my observation and information go, this agriculture is chiefly confined to the Guntoor Circar, where the seeds form a considerable branch of commerce; they are mixed with those of Holcus Sorghum or some other of the large culmiferous tribe and sown together; these plants run on the surface of the earth, and help to shade them from the sun, so that they mutually help each other. The fruit, as I observed above, keeps well for several months if carefully gathered and suspended. This circumstance will render it a very excellent article to carry to sea during long voyages.'

3. *C. satirus,* the cucumber. Tartary is assigned to this species as its native country, but upon authority equally questionable with that for the melon. No modern traveller seems to have found it wild. [CUCUMBER.]

4. *C. Colocynthis,* the Colocynth gourd. This plant furnishes the drug colocynth, so well known for its purgative properties. It is found wild in the Grecian Archipelago, Egypt, and the north-eastern parts of Africa generally. Burckhardt saw it covering large tracts in Nubia; and Roxburgh speaks of it as common on the coast of Coromandel. It is doubtful, however, whether the plant of the latter botanist is not rather *C. Pseudo-Colocynthis.* This species grows like a cucumber, but has cordate-ovate, many-cut, and lobed leaves, white beneath with hairs. Its fruit is small, round, deep yellow, smooth, hard externally, with an intensely bitter pulp. The gourds are gathered in autumn, when they are beginning to turn yellow; they are then peeled and dried rapidly in stoves.

5. *C. Citrullus,* the water-melon. Its deeply-lobed and gashed leaves, and its round fruit, with a spotted rind and a cold watery pink or white flesh, in which lie a number of black seeds, sufficiently mark this species, which is most extensively cultivated all over India and the tropics of Africa and America, and generally in hot countries, but which is of no value in the north of Europe, where high flavour is required more than cooling properties.

The other species are of little moment compared with the preceding; many are eatable, but they are in all respects inferior in quality and size. *C. Duduim* is sometimes grown under the name of Queen Anne's Pocket Melon; but it is a mere curiosity.

CUCUMIS COLOCYNTHIS, or Bitter-apple, an annual plant, the fruit of which is about the size of but rather lighter colour than an orange; the rind smooth; when the rind has been removed, a white spongy pulp or pith is found within, which constitutes the officinal part, or the colocynth, the seeds being rejected. The rind is generally removed before reaching Europe. One hundred parts of decorticated apples consist of twenty-eight parts of pure pith, and seventy-two parts of seeds.

The active principle is a peculiar bitter principle (Colocynthin), which is of a resinoid nature, more soluble in alcohol than water; its solubility in water is much increased by union with extractive, combined with which it exists in the pulp, so that nearly all the virtues are yielded to a watery extract, which is generally employed for its administration. The compound extract, in the formation of which proof spirit is used, and to which are added other purgative substances and aromatics, is however preferable, and it is thereby rendered milder yet more certain in its action.

It is a purgative in very constant use, either alone, or more commonly united with mercurial purgatives: it is employed for the removal of constipation and visceral obstructions; at the commencement of fevers and other inflammatory complaints, it is of decided utility. As an overdose has all the poisonous effect of a vegetable acrid, it must be used with caution.

CUCU'RBITA, the genus from which the natural order derives its name. It differs from cucumis in having its petals very much grown together, and the seeds a little tumid at the edge. The common gourd, *C. maxima,* with its endless varieties, the vegetable marrow, *C. orifera,* the orange gourd, *C. aurantia,* and *C. Melopepo,* the squash or bush gourd, are the principal types. It is not a little remarkable, that the native country of these common plants is entirely unknown.

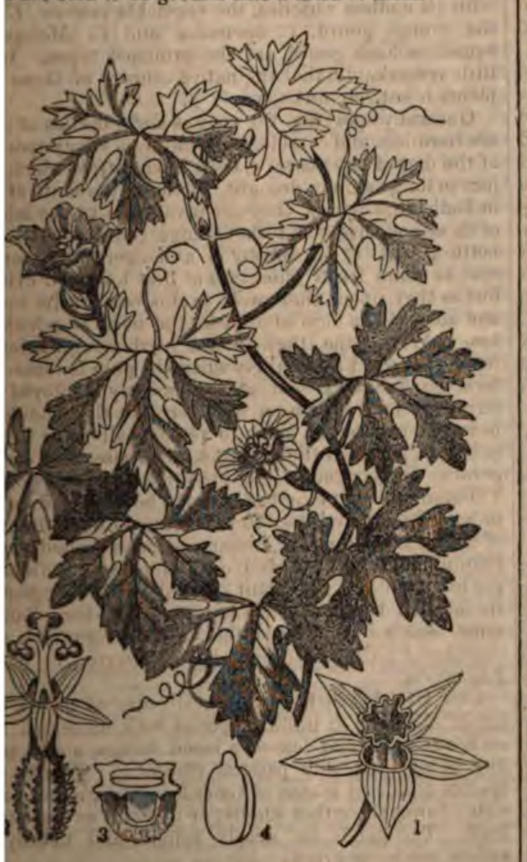
Generally speaking, the species and varieties of cucurbita are harmless and eatable, constituting a very important part of the diet of the poorer classes in countries which are subject to long summer drought. Hence in the south of Europe, in India, and Africa, they are invaluable to the inhabitants of those countries; but the orange gourd is bitter, and the bottle-gourd, *C. lagenaria,* is a dangerous poison. This species bears fruits which are at first long and cylindrical; but as they ripen, they swell exclusively at the upper end, and acquire the form of a flask, the neck of which is their base. When ripe, they become hard enough externally to hold water, and accordingly when the pulp is removed, they form good bottles, and are extensively employed for that purpose. It is necessary however that they should be repeatedly washed out, so as to remove all trace of a bitter principle in which they abound, otherwise their use is dangerous. Some months since (1837), a sailor was poisoned at Falmouth, by drinking beer out of a bottle-gourd improperly prepared; and Professor Royle mentions, upon the authority of an intelligent native Indian doctor, attached to the gaol hospital at Saharunpore, a case of poisoning from eating the bitter pulp of this plant, in which the symptoms were those of cholera. We mention this fact here, but at the same time we should add that the bottle-gourd is not now considered a true cucurbita, but is referred to the genus *Lagenaria.*

CUCURBITA'CEÆ, a natural order of plants, consisting of climbing or trailing species with unisexual flowers, scabrous stems and leaves, a lobed foliage, and a more or less pulpy fruit with parietal placentæ. Nearly all the species climb by means of tendrils. The greater part consists of annuals, either wholly, or in so far as their stems at least. The petals are deeply veined, and usually either yellow, white, or green.

The order abounds in useful or remarkable plants, comprehending as it does the melon, gourd, cucumber, colo-

bryony, and all the many species approaching those
Professor Royle, in his valuable 'Illustrations,'
s that 'They are chiefly remarkable for the power
ting themselves to the different situations where
ay be grown. Thus, we hear of their affording large
cy fruit in the midst of the Indian desert, where
300 feet from the surface (Elphinstone); and they
ally grown in the dry season on the sandy islands
an rivers; but excess of moisture does not appear
jurious, as the great majority are successfully culti-
n the rainy reason; and Mr. Moorcroft describes an
ve cultivation of melons and cucumbers on the beds
ds which float on the lakes of Cashmere; they are
ly cultivated in Persia and in China. (Vide *Hort.*
2nd ser., vol. i. p. 468, and *Staunton's Embassy*).
hiefly annuals which a few months suffice to bring
ection, we find them succeeding in the summer tem-
e of northern climates, and thus extending from
to 55° or 60° of northern latitude, and southwards
Cape of Good Hope. Some of the species may be
the most arid places; others in the densest jungles.
at the foot of a tree, they emulate the vine in as-
its branches; and near a hut they soon cover its
with a coating of green. They form a principal por-
the culture of Indian gardens: the farmer even rears
the neighbourhood of his wells.'

principles especially deserve attention in this order;
saccharine and nutritious, the other bitter, acrid,
rgative; and the qualities of the products of the spe-
y according to the preponderance of the one or the
In the melon, the gourd, and their allies, the first
almost exclusively, and hence the edible nature of
uit; but even here its well-known laxative quality
ntly attests the presence of the bitter principle in
egree. In the colocynth, the bottle-gourd, various
of luffa, bryony, and others, the bitter principle
in a state of concentration, and hence the active
n dangerous qualities of those plants, from which
umber itself is not exempt: only its bitterness is
ed by the peculiar cultivation of that plant. The
f some kinds yield oil; and those of Cucumis Mo-
are said to be ground into a kind of meal.



[Momordica Balsamina.]

erile flower; 2, a fertile flower; 3, a section of a seed; 4, the embryo.

CUDDAPAH, or KIRPA, a corruption of the Sanscrit word Cripa, signifying mercy. This division of the Balaghaut territory, ceded to the English by the Nizam in 1800, is situated between 13° and 16° N. lat., and between 77° and 80° E. long. [BALAGHAUT.] Cuddapah has been constituted a collectorate by the English, and contains seven subdivisions, viz., Cuddapah, Cummum, Dupaud, Gandicotta, Gurrumcondah, Punganoor, and Sidout: each of these subdivisions is named after its capital town. Throughout this collectorate, saltpetre, soda, and common salt are found abundantly, and to this cause it is owing that, except in the rainy season, the water is generally brackish.

The town of Cuddapah, in 14° 32′ north lat., and 78° 54′ east long., stands 507 feet above the level of the sea, on both sides of the river Cuddapah, a small stream which rises in the hills to the south-east of the town. This town was long the capital of an independent Patan state, and so continued for some time after the destruction of the kingdoms of the Deccan. The palace of the former nabobs has been converted into a court of justice and a prison. In the country surrounding the town a considerable quantity of sugar is made. The celebrated diamond mines of Cuddapah are about seven miles north-east of the town, on both sides of the Pennar River. These mines have, it is said, been worked for several hundred years with various success. The places in which diamonds have hitherto been found consist either of alluvial soil or of rocks of the latest formation. The mines are pits of small depth. The diamonds are not scattered through the whole of the mine from the surface to the greatest depth, but occur in beds always harder than the adjacent soil, and usually not exceeding one or two feet in thickness. Dr. Heyne, who carefully examined these mines, has given in his statistical tracts the following description of one. 'The uppermost, or superficial stratum, consists of sand or gravel, mixed with a small proportion of loam. Its thickness scarcely exceeds a foot and a half. Immediately under it is a bed of stiff blueish or black mud, similar to what are seen in places that have been inundated; it is about five feet thick, and contains no stones. The diamond bed comes next, and is easily distinguished from the incumbent bed by the great number of large rounded stones which it contains. It is about two feet or two and a half thick, and is composed of large round stones, pebbles, and gravel connected together by clay.' The contents of this bed are put into a cistern about eight feet square and three feet deep, when water is poured into it, which separates the clay and loamy particles, leaving the gravel and small stones at the bottom These being removed are thinly spread upon a smooth surface about twenty feet square of hardened clay, and six or seven people examine the whole very carefully several times. At first they pick out the large stones; at the second and subsequent examinations the smaller gravel is carefully turned over by the hand, while they 'watch for the spark from the diamond, which invariably strikes the eye.' Cuddapah is 153 miles from Madras, and 220 miles from Seringapatam, travelling distance. Cummum, the capital of the subdivision of that name, is in 15° 37′ north lat. and 79° 10′ east long., 56 miles north-west from Ongole. Dupaud stands in 15° 58′ north lat. and 79° 23′ east long. This division, which is traversed by the Gondigam River, contains copper ore of good quality. The town and fort of Gandicotta are in 14° 51′ north lat. and 78° 23′ east long., 43 miles north-west from the town of Cuddapah. This was formerly considered a place of much strength; it is now of but little importance; there is a diamond mine in the neighbourhood. Gurrumcondah, near the verge of the eastern Ghauts, is situated in 13° 46′ north lat. and 78° 34′ east long., about 130 miles north-west from Madras. The district is well watered by several mountain streams, and is very productive. Punganoor is a fortified town, in 13° 21′ north lat. and 78° 3′ east long., 47 miles north-west from Vellore. Sidout is a fortified town, in 14° 30′ north lat. and 79° 2′ east long., twelve miles east of Cuddapah. It is surrounded by high stone walls in good repair, within which are ramparts; the fort is commanded by some of the neighbouring hills. It was taken by Hyder, who carried away the family of the nabob, and placed them in confinement. The town has much declined in population since the country has been in possession of the English, and the removal of the government offices to Cuddapah.

With great facilities for ascertaining the amount of the population throughout British India, little has been done to that end upon which reliance can be placed. The entire population of the collectorate of Cuddapah was stated to amount, in 1806-7, to 1,066,237; and in 1822-3 to 1,094,460 souls, of whom 578,461 were males, and 515,999 females. The number was stated, in 1828-9, at no more than 981,562; and it is alleged that this diminution was caused by the cholera. The great bulk of the inhabitants are Hindus. Returns were made by the collector in 1826, from which it appeared that throughout the whole of Cuddapah there were then only 494 schools, in which were instructed 6000 scholars, 5658 of whom were Hindus, and 342 Mohammedans.

(Rennell's *Memoir of a Map of Hindustan;* Heyne's *Statistical Tracts on India; Report of Committee of Commons on the Affairs of India in* 1832.)

CUDDALORE, a town in the Carnatic province, on the western shore of the Bay of Bengal, in 11° 44′ north lat., and 79° 50′ east long. The town is built on both sides of the Pennar River; the houses on the north side are modern, and many of them handsome. The dwelling of the collector, the principal resident European officer, is a large and elegant structure, with avenues of fine trees. The streets on the south side, called the Old Town, are many of them spacious, and contain several handsome houses. Altogether, Cuddalore is one of the handsomest towns in the south of the peninsula.

Cuddalore was taken from the French by the army under Colonel Coote in April, 1760, and remained under the government of the nabob of Arcot until April, 1782, when it was taken by the rajah of Mysore, assisted by a body of French troops. In June of the following year, the town was attacked by a British force under General Stuart, which was repeatedly defeated, and suffered great loss in attempts to carry the place by assault. The last of these attacks, in which the besiegers lost 600 men, occurred only two days before the arrival of the news of peace having been concluded between France and England: this event of course put an end to hostile operations. Cuddalore, with the remainder of the province of Arcot, came into possession of the English by treaty in 1795, and has so continued.

(Rennell's *Memoir of a Map of Hindustan;* Mills' *History of British India.*)

CUDWORTH, RALPH, was born at Aller, in Somersetshire, in 1617. Having been entered at Emmanuel College, Cambridge, in 1630, when he was but thirteen, he commenced residence in 1632, and became in due course of time, as his father had been before him, a fellow of Emmanuel. He acted for some time as tutor in the college, and had among his pupils the afterwards celebrated Sir William Temple. He had taken the degree of M.A. in 1639; he took that of B.D. in 1644, maintaining upon this occasion the two following theses: 1. *Dantur boni et mali rationes æternæ et indispensabiles;* 2. *Dantur substantiæ incorporeæ suâ naturâ immortales.* In 1644 he was also appointed master of Clare Hall; and in the succeeding year was elected to the regius professorship of Hebrew. On receiving this appointment he devoted himself with zeal to the subject of Jewish antiquities. He took the degree of D.D. in 1651. Though holding the two situations which have been mentioned, and besides these the living of North Cadbury, in Somersetshire, worth 300*l.* a year, to which he had been presented by his college shortly after taking his master's degree, he did not find his means sufficient for his support. It does not appear that he was a man extravagant in his habits; but owing, it is said, to pecuniary difficulties, he now absented himself for some time from Cambridge. He returned in 1654, having been chosen master of Christ's College. He now married, and the remainder of his life was spent in this college. In 1662 he was presented by the then bishop of London to the vicarage of Ashwell, in Hertfordshire; and in 1678 he was installed prebendary of Gloucester. In this last-mentioned year appeared his great work, the 'True Intellectual System of the Universe;' or rather (for though complete in itself, it is but a fragment of a larger work which he designed), the first part of the Intellectual System. This first part is devoted to the refutation of atheism. The whole work was to consist of three parts; but the second and third parts, which were to treat respectively of the nature of moral distinctions and of free will, were, though written, never published by him.[*]

Dr. Cudworth died at Cambridge, in 1688, in the 71st year of his age, and was buried in Christ's College. He left one daughter, who married Sir Francis Masham, and who is known, under the name of Lady Masham, as the friend of Locke.

Dr. Cudworth was one of that set of Cambridge divines, Latitudinarians, Arminians, and Socinians, as they were called by those who having nothing definite to bring against them resorted to ugly names, on whom Bishop Burnet has passed a high eulogium in his history of the reign of Charles II.[*] The chief others at this time were Drs. Whitcheot, Wilkins, Henry More, and Worthington. 'Dr. Whitcheot,' says Burnet, 'set young students much on reading the antient philosophers, chiefly Plato, Tully, and Plotin, and on considering the Christian religion as a doctrine sent from God, both to elevate and sweeten human nature, in which he was a great example, as well as wise and kind instructor. Cudworth carried this on with a great strength of genius and a vast compass of learning. He was a man of great conduct and prudence; upon which his enemies did very falsely accuse him of craft and dissimulation.' (*Hist. of his own Time*, vol. i., p. 321.)

The 'Intellectual System,' or that (properly the first) part of it which now passes under the name, is directed, as has been said, against atheism. This is one of three, as Cudworth conceives, false systems or hypotheses of the universe, or one of three possible modes of fatalism. They are thus briefly described in the preface:—'Of the three fatalisms or false hypotheses of the universe mentioned in the beginning of this book, one is absolute Atheism, another immoral Theism, or religion without any natural justice and morality (all just and unjust, according to this hypothesis, being mere thetical or factitious things, made by arbitrary will and command only), the third and last, such a Theism as acknowledges not only a God or omnipotent understanding Being, but also natural justice and morality, founded in him, and derived from him; nevertheless no liberty from necessity anywhere, and therefore no distributive or retributive justice in the world.' Before erecting the true intellectual system of the universe (the epithet *intellectual* being used, as he tells us, 'to distinguish it from the other, vulgarly so called, systems of the world, that is, the visible and corporeal world, the Ptolemaic, Tychonic, and Copernican'), it was his object to demolish these false systems. And the first of them, atheism, or the atheistic fate, is attempted to be demolished in the first part, which is all that we have under the name of 'Intellectual System.' It is a work of great learning, and also of great acuteness. Lord Bolingbroke has said of Cudworth, that he read too much to think enough, and admired too much to think freely; a criticism which, certainly unjust, appears plausible only from the well-known extent of Cudworth's erudition. But graver charges have been founded upon this work. 'You know,' says Lord Shaftesbury, 'the common fate of those who dare to appear fair authors. What was that pious and learned man's case who wrote the Intellectual System of the Universe? I confess it was pleasant enough to consider, that though the whole world were no less satisfied with his capacity and learning than with his sincerity in the cause of the Deity, yet was he accused of giving the upper hand to the atheists, for having only stated their reasons and those of their adversaries fairly together.' (*Characteristics*, vol. ii. p. 262.)

'There wanted not country clergymen,' says Warburton, 'to lead the cry and tell the world that, under pretence of defending revelation, he wrote in the very manner that an artful infidel might naturally be supposed to use in writing against it; . . . . that with incredible industry and reading, he had rummaged all antiquity for atheistical arguments, which he neither knew how, nor intended, to answer; in a word, that he was an atheist in his heart, and an Arian in his book.' (*Divine Legation of Moses*, vol. iii., ed. 1765. Preface.) The accusation alluded to in these passages is made in a circuitous way by a Mr. John Turner, in a 'Discourse of the Messiah.'

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[*] Dr. Birch, in the memoir prefixed to his edition of the 'Intellectual System,' having related the calumnious charges of atheism brought against Cudworth on the appearance of this work, goes on to quote the following remark of Warburton's:—'The silly calumny was believed; the much injured author grew disgusted; his ardour slackened; and the rest and far greatest part of the defence never appeared.' (p. 22.) Though this does not necessarily imply that the remainder of the work was not written, the inference would not be a very forced one. Nor does Dr. Birch ever explicitly state that the second and third parts were written, contenting himself with the remark—'He left several posthumous works, most of which seem to be a continuation of his "Intellectual System," of which he had given the world only the first part' (p. 31.) A reference merely to Dr. Cudworth's preface, in which he makes a division of his subject, or to the beginning of his first chapter, would have shown that the treatise on Eternal and Immutable Morality, which has been published since his death, is the second part, and the treatise on Liberty and Necessity, which is still in MS., is the third part of the work.

[*] An account and defence of these divines is to be found in a tract entitled 'An Account of the new Sect of Latitude-men at Cambridge,' which was reprinted in the second volume of the Phœnix, London, 1708.

In attacking atheism, or the atheistic fate, Dr. Cudworth describes the atomic physiology which, as held by Democritus, and other antient philosophers, involved atheism. It being his object to demolish atheism under every form, and therefore the atomic atheism, he yet adopts the atomic physiology, contending that 'so far from being either the mother or nurse of atheism, or any ways favourable thereunto (as is vulgarly supposed), it is indeed the most opposite to it of any, and the greatest defence against the same.' For the better confutation of other forms of atheism, to which he gives the names Hylozoic and Cosmo-plastic, he makes the hypothesis of an 'artificial, regular, and plastic nature,' working in complete subordination to the Deity. And to avert an argument brought against the oneness of the Deity, from its unnaturalness as shown by the general prevalence of Polytheism among the Pagan nations, he contends that 'the Pagan theologers all along acknowledged one sovereign and omnipotent Deity, from which all their other gods were generated or created,' and that their Polytheism was but a polyonymy of one God.

The 'Treatise on Eternal and Immutable Morality' corresponds to the second part of the 'Intellectual System.' It is directed against those who 'affirm justice and injustice to be only by law and not by nature;' among which affirmers he places, erroneously in our opinion, Hobbes.

Besides the 'Intellectual System,' Dr. Cudworth published, 1. 'A Discourse concerning the true Notion of the Lord's Supper,' in which he maintains, as Warburton has since maintained, that the Lord's Supper is a feast upon a sacrifice; 2. A Treatise, entitled, 'The Union of Christ and the Church Shadowed, or in a Shadow;' 3. 'A Sermon on John ii. 3–4, preached in 1647 before the House of Commons on a day of Public Humiliation;' 4. 'A Sermon preached in 1664 at Lincoln's Inn, on 1 Cor. xv. 57;' 5. A Treatise, entitled, 'Deus Justificatus, or the Divine Goodness vindicated and cleared, against the assertors of absolute and inconditionate Reprobation.'

He left several works in manuscript, only one of which has yet been published; viz., the 'Treatise concerning Eternal and Immutable Morality,' which appeared with a preface by Dr. Chandler, Bishop of Durham, in 1731. The rest are, 'A Discourse of Moral Good and Evil;' 2. 'A Discourse of Liberty and Necessity, in which the grounds of the Atheistical Philosophy are confuted, and Morality vindicated and explained;' 3. 'A Commentary on Daniel's Prophecy of the Seventy Weeks;' 4. 'Of the Verity of the Christian Religion against the Jews;' 5. 'A Discourse of the Creation of the World, and Immortality of the Soul;' 6. 'A Treatise on Hebrew Learning;' 7. 'An Explanation of Hobbes's Notion of God, and of the extension of Spirits.' These manuscripts, after having passed through many dangers, were finally purchased for the British Museum, in which institution they now are.

An abridgment of the 'Intellectual System' was published in 1706 by Mr. Wise, Fellow of Exeter College, Oxford, in two volumes, 4to. In 1733 a Latin translation was published by Dr. Mosheim, at Jena; in which the numerous errors in Cudworth's numerous quotations are corrected, and whose style is less complicated than that of the original: a French translation, which had been commenced by M. Bourdelin, a member of the French academy, was prevented from being finished by the death of the translator. That part of the 'Intellectual System' which treats of the 'plastic nature' gave rise to a controversy between M. Bayle and M. Le Clerc; the former of whom contended that such an hypothesis went to show the possibility of Hylozoism, while the latter defended Cudworth by representing it as a mere instrument of the Deity. M. Le Clerc's articles, which are valuable commentaries on this part of Cudworth's work, are in the *Bibliothèque Choisie*, tom v., vi., vii., ix. (Kippis's *Biographia Britannica;* Mosheim's and Birch's *Lives*.)

CUE'NÇA, a province of Spain, in New Castile, is bounded to the north by the provinces of Guadalaxara and Soria, on the east by Aragon and Valencia, south by Murcia and La Mancha, and west by Guadalaxara and Toledo. It is one of the most elevated provinces of Spain, its north and east parts being occupied by the high central chain, which runs nearly north and south on the borders of Aragon and Castile, being a continuation of the Sierra de Oca, and assumes in succession the names of Sierra de Molina, Sierra de Albarracim, in Aragon, and lastly, of Sierra de Cuença. [CASTILLA.] The Tagus, several affluents of the Guadiana, and the Xucar, have their sources in the province of Cuença. This region formed part of the country of the Celtibori. It is now divided into three partidos or administrative districts, Cuença, Huete, and S. Clemente. There are two cities, Cuença and Huete, 245 small towns or boroughs, and about 200 villages. The mountainous part abounds with timber trees, fit for house and ship building. The inhabitants of the mountains are chiefly shepherds, and have numerous flocks of sheep. Wool is one of the staple products of the country, part of which is exported, and part manufactured into coarse cloth, carpets, baize, &c., the manufactures of which were once very flourishing in this province, but are now much decayed. There are also manufactories of leather, paper, and soap. The west and south parts of the province consist of arid and in great part uncultivated plains. Cuença is altogether one of the thinnest peopled provinces in Spain. The country produces corn, oil, wine, honey, wax, fruit, and saffron, which last forms an important article of exportation. It also abounds with game, and the rivers and lakes with trout and other fish. There are several small but very deep lakes, one of which, near Montealegre, is salt. Jasper of various colours, and silver, copper, iron, coals, and alum, are also found. The length of the province from north to south is about 120 miles, and its medium breadth between 70 and 80; and the population, as given by Miñano, is 326,000. The same author gives the following statistics of the annual income or produce of the country: land in possession of the laity, 15,870,000 reales de vellon; ditto belonging to the church and convents, 4,646,000 reales; rent of houses belonging to the laity, 3,244,000; ditto belonging to the clergy, 5,221,000. (*Diccionario Geografico estadistico de España*, 1830.) The climate is generally healthy; the inhabitants are laborious and honest, and much attached to their native soil, which few of them are induced to quit.

CUE'NÇA, the town of, stands nearly in the centre of the province, on a steep hill, surrounded by higher mountains, and just above the confluence of the Huecar and Xucar, 80 miles east by south of Madrid. It is a bishop's see, and is one of the cities which sent deputies to the old cortes of Castile. It has many churches, seven convents of Monks and six of Nuns, two hospitals, besides one for foundlings, three colleges, and a clerical seminary. The cathedral is large and handsome; the interior is rich in jasper and other valuable stones; one of the altars, which is dedicated to St. Julian, is much admired for the beauty of the materials and workmanship. Several of the convents are possessed of good paintings. The population is stated by Miñano to be 7,800. Cuença is surrounded by walls: the streets are mostly very steep; the town is well supplied with water. There is a handsome bridge over the Huecar outside of the town. Cardinal Gil de Albornoz and Alonso de Ojeda, one of the discoverers and conquerors of America, were natives of Cuença.

CUERS. [VAR, Department.]

CUIRASS or CUIRASSE, a piece of defensive armour, made of plate well hammered, serving to cover the body from the neck to the girdle, both before and behind; the front called the breast, the hinder part the back-plate: these were fastened to each other by straps, buckles, hooks, or some other contrivance. The name is supposed to be derived from *Curatia or Curassa*, a Latin word of the middle age, which occurs in charters at least as early as the fourteenth century (Meyrick's *Glossary of Military Terms*), originally derived from the French *cuir* or the Latin *corium*, 'a hide,' the earliest cuirasses being made of leather, though afterwards chiefly of metal, both brass and iron.

This species of armour was known to the Greeks and Romans. A breast and back-plate of Roman workmanship are preserved among the Hamilton antiquities in the British Museum, which, when worn, appear to have been held together by strings or wires, fastened to nipples in front. In later ages the cuirass was disused, and was not revived in Europe till about the beginning of the fourteenth century. In England it was disused after the reign of Charles II., except in one instance; but has of late years been revived for our cavalry. The cuirass was stated in Col. Lygon's evidence before a committee of the House of Commons on army and navy appointments, in 1833, to have been introduced as a part of the accoutrements of the Life-Guards within the preceding twelve years. To a question, 'Can you state what was the purchase-cost per man of the cuirass;' he answered, 'I apprehend they cost nothing; they have been lying in the Tower for years, and were worn at the battle of Dettingen.'

In the Romish calendar, under October 14, we find the name of St. Dominic, who is called *loricatus* or the cuirassed, a title given to a saint of the eleventh century, who constantly wore an iron cuirass next to his skin.

CUIRASSIERS, heavy cavalry armed with cuirasses. Most of the German powers, especially the emperor of Austria and the king of Prussia, have regiments of cuirassiers. They also form a portion of the French cavalry. In England we have no regiments which go by this denomination, although what are called the life-guards now wear the cuirass.

CUJA'CIUS, CUJAS, JACQUES, was born at Toulouse in the year 1520. The day of his birth is unknown. His father, a tanner of Toulouse, was named Cujaus, which the son changed into Cujas, for the purpose of making the name better suited for the Latinized form of Cujacius. In the latter part of his life he often signed De Cujas. Cujas, at an early age, distinguished himself by his talents and assiduity, and is said to have learned Greek and Latin by himself without any teacher. He studied law at Toulouse under Arnold Ferrier, for whom he entertained a high respect all his life; but he acquired the best part of his extensive knowledge by his own industry. With unwearied labour he studied all the works of the best civilians, and exercised himself in discussions with his fellow-students. In 1547 he began to lecture on Justinian's Institutes with great applause, and soon acquired such a reputation that the most distinguished men of the country, as President Dufaur and John de Foix, sent their sons to Toulouse to study under Cujas. In 1554 a professorship of the Roman law being vacant in the university of Toulouse, Cujas was a candidate, but, by the intrigues of his enemies, a man of very moderate talents, Stephen Forcadel, was preferred. Shortly after, being invited to Cahors as professor of law, he removed there with the greater part of his pupils. In the following year Margaret de Valois, at the suggestion of the Chancellor l'Hôpital, invited Cujas, as professor of law, to the university of Bourges. At that time there were two celebrated lawyers in Bourges, Hugh Doneau (Donellus) and Francis Duarin (Duarenus), both of whom became the rivals and enemies of Cujas. This was particularly the case with Duarin, who excited the students against Cujas to such a degree that, as Cujas also had a party of his own among the students, great disturbances would have arisen if he had not left the place. Having removed to Paris he was invited by a deputation from the city of Valentia to accept a professorship in that university. Cujas accepted the invitation; but Duarin having died in the year 1559, he returned to Bourges, where he resided till 1566. In the meantime Margaret de Valois, his patroness, had married the duke of Savoy, who gave Cujas an invitation as professor to the university of Turin. Not liking Italy, he returned to Valence as professor, and lived there till 1575, with some short interruptions, when he left on account of the religious quarrels which disturbed that city. During his residence in Valence the reputation of Cujas rose to its height. Young men from all parts of Europe, and particularly from Germany, not only students of law but those who were devoted to other sciences, came to Valence to study under Cujas. Among his pupils was Joseph Scaliger, the most celebrated philologist of his time, and James Augustus de Thou (Thuanus), the French historian. Henry III. of France made Cujas counsellor in the parliament of Grenoble, and loaded him with honours. In 1575 Cujas returned to Bourges as professor; but to avoid the religious troubles he again left Bourges for a year, during which he lectured on the civil law at Paris. Returning to Bourges he resided there till his death, having refused an invitation from Pope Gregory XIII., as professor in the university of Bologna.

The latter years of his life were greatly troubled by the religious disturbances which then distracted France. On the death of Henry III. the party of the Cardinal de Bourbon made great promises to Cujas, if he would write in favour of the cardinal against the rights of Henry IV. Cujas refused the proposals, and the fanatics of Bourges being excited against him by his enemies, he nearly lost his life in a tumult. On the 4th October, 1590, Cujas died of grief, as it is said, for the wretched situation of his country, in which civil war had dissolved all social order. Both friends and enemies united in honouring him with a splendid funeral.

Cujas was twice married. He had a son of great talents, who died in 1581; and a daughter by his second marriage, who was notorious for her disorderly life.

Cujas was distinguished both as a teacher and a writer. His merits principally consisted in substituting a more rational system in place of the unscientific method of Bartolus, and in grounding his interpretation of the civil law on a profound study of the original authors, and of the manuscripts of the Roman law. He possessed in his own library 500 MS. on the Roman law. His knowledge of archæology also and his exact acquaintance with the antient languages gave him a decided superiority over other civilians. In teaching as well as in his writings he followed the exegetical method, in which he may still be considered as a model.

The works of Cujas are very numerous. They are commonly divided into Opera Priora, which were published in his life by himself: first at Paris, 1577, 5 vols. fol., and again in 1583; and Opera Posthuma, which were edited by his friends after his death. Both the Opera Priora and Posthuma were first collected and edited by Alexander Scot, Lyon, 1614. The most complete edition is that by Fabrot, Paris, 1658, 10 vols. fol. As it is very difficult to find what we want in the works of Cujas, the 'Promptuarium Operum Jacobi Cujaci; auctore Dom. Albunensi,' Naples, 1763, 2 vols. fol. is of great assistance.

The works of Cujas consist: 1. Of editions of the original works on the civil law, principally of the Codex Theodosianus, Pauli receptæ sententiæ, Justinian's Institutes, of the three latter books of the Codex Justinianeus; of the Consuetudines Feudorum with notes, and a translation of the sixtieth book of the Basilika, of which he also published an edition; 2. Of commentaries, notes, and interpretations relating to most parts of the Institutes, Pandects, Code, and Novels; a Commentary on the Decretals; and Lectures on many passages of the Pandects; 3. Other important works, as his Observationum and Emendationum libri xxviii, a work which civilians in the time of Cujas called 'opus incomparabile et divinum.' It contains corrections of the original works on law and of a great number of other authors, both Greek and Latin. This work is a real treasure to philologists; 4. Paratilla ad Digesta, et in libros ix. Codicis, which is a summary of the titles of the Pandects and the Constitutions of the Code.

(*E'loge de Cujas*, par Bernardi, Lyon, 1775; *Histoire de Cujas*, par Berriot; Saint Prix, *History of the Roman Law*, which is the best biography of Cujas; *Ed. Spangenberg; Cujas und seine Zeitgenossen*. Leipzig, 1822.)

CULEX. [CULICIDES.]

CULI'CIDES (Latreille), a family of dipterous insects of the section Nemocera. Technical characters:—Proboscis long and slender, projecting forwards, usually straight, terminated by two little lip-like appendages; sucker composed of six slender bristle-like members: palpi five-jointed, generally elongated; antennæ filiform, covered with hairs—in the male sex resembling little plumes; eyes contiguous: no ocelli; wings inclined, lying close to the body when at rest, and having one marginal and two sub-marginal cells.

The Culicides, according to Latreille, constitutes the first family of dipterous insects, and is the same group as that designated by Linnæus *Culex*. It is divided into three genera, distinguished principally by the following characters:

Palpi equal in length to the proboscis in both sexes; genus 1, *Anopheles* (Meigen).

Palpi of the males longer than the proboscis, and in the females very short; genus 2, *Culex*.

Palpi shorter than the proboscis in both sexes; genus 3, *Œdes*.

We are but too well acquainted with the torment inflicted by the insects of this tribe, which are known in this country by the name of *Gnats*, are called in France *Cousins* and in America *Mosquitoes*.

The pain and irritation are caused by their piercing the skin to feed upon the blood (by means of the little bristles forming part of the proboscis), and injecting at the same time a poisonous fluid. It is said the females alone are the persecutors.

The humming noise accompanying their flight is produced by the vibration of their wings. Gnats seldom appear during the day-time, except in thick woods, and they always abound most in damp situations, a circumstance owing to the habits of their larvæ, which reside in stagnant waters.

The female gnat deposits her eggs (which amount to 200 or 300 in a year) one by one; and as they are deposited, they are joined together, and form a little raft, which floats on the surface of the water. The eggs are hatched in about three days' time, and produce little greenish larvæ, which have a distinct head and lengthened body, composed of numerous segments. The head is furnished with two ciliated organs, which are in constant motion. This motion appears to be for the purpose of creating a current, by which means minute animalculæ, or other substances which may constitute the food of the animal, are drawn into the mouth. Two other appendages, furnished with tufts of hair, appear to co-operate with the former for this purpose.

The breathing apparatus of the larva consists of a tube, terminated by radiating setæ situated at the apex of the body; through this tube the air is conveyed to the tracheæ, and for this purpose it is brought to the surface of the water, so that the animal is then in an inverted position. There is another apparatus also, situated at the tail of the animal, opposed to the breathing apparatus, which serves as a fin, and enables the larva to swim and dive with considerable velocity.

These larvæ are full grown in about fifteen days' time; they next assume the pupa state; the animal then appears to have a rounded form, owing to the apex of the body being recurved. It still inhabits the water, and is active; the position of its breathing apparatus is, however, altered, it being now situated on the anterior part of the body, and consists of two little tubes, which, as before, are applied to the surface of the water for the reception of air. When about to assume the imago state, the skin which covered the pupa being loosened from the animal within, and the space between the two being occupied with air, it floats upon the surface of the water; the gnat breaks through the upper part, and stands on the skin it has quitted, and which now serves as a little boat, upon which it floats until it has attained strength to fly.

Culex pipiens, Linn., the common gnat, is less than a quarter of an inch in length; the palpi and antennæ are brown; the thorax is of a yellowish brown, with two darker lines; the abdomen is of a pale grey colour; the legs are brown, and the base of the thighs yellowish.

The insect which is so troublesome in the island of Cuba, the mosquito (*Culex mosquito*), is not quite so large as the common gnat. Its proboscis is black; the palpi are spotted with white; the head and thorax are spotted with silvery white, and the latter has a curved band of the same hue. The edges of the segments of the body are also of a silver-like colour.

CULLEN, WILLIAM, was born in Lanarkshire, in the year 1712. His parents being in humble circumstances, he commenced the study and even the practice of physic under certain disadvantages; and after serving an apprenticeship to a surgeon-apothecary in Glasgow, he became surgeon to a merchant vessel, trading between London and the West Indies. He soon returned to his own district, and practised in the country parish of Shotts, a region proverbial, even in Scotland, for bleakness and poverty. Here an incident occurred which was perhaps his first gleam of good fortune, or, in other words, the first accident of which his genius availed itself to further his success. The duke of Argyle, while on a visit to a gentleman in the neighbourhood, was amusing himself with some chemical experiments, for which the apparatus in his possession proved insufficient: his host recollected Cullen as a person likely to supply the deficiency; he was accordingly invited to dinner, introduced to the duke, and acquired his good opinion. He soon removed to Hamilton, where he was admitted a councillor in 1737, and was chief magistrate in 1739 and 1740. Here he formed a partnership with a young man destined to attain equal celebrity, William Hunter. The chief object of this connexion was to enable them to improve their medical education; and accordingly they agreed that one of them should alternately be allowed to study during the winter at some medical school, while the other should carry on the business in the country for the profit of both parties. Cullen took the first turn, and passed his winter at Edinburgh. Hunter, when his turn arrived, went to London, where he soon recommended himself to Dr. Douglas, a lecturer on anatomy and midwifery, who engaged him as an assistant. Thus ensued a premature dissolution of partnership; for Cullen of course threw no obstacles in the way of his friend's advancement, but readily cancelled the articles. They maintained ever after a cordial communication by letters, though it does not appear that they had ever after a personal interview.

It was during this period of country practice that Cullen was united to Miss Johnston, the amiable daughter of a neighbouring clergyman. She married him when he had no worldly advantages to recommend his suit, presented him with a numerous family, and enjoyed the gratification of sharing his dignified prosperity until 1786, when she died.

The duke of Hamilton having been suddenly taken ill at his palace, sent for Cullen, who not only benefited him by his skill, but attracted him by his conversation. It appears to have been the interest of this nobleman which procured him the situation of lecturer of chemistry in the University of Glasgow; and having previously taken his doctor's degree, he began his first course in 1746. His medical practice daily increased; and when a vacancy occurred in 1751, he was appointed by the king to the professorship of medicine. It was now that he began to show the rare and most precious talent of giving science an attractive form, diffusing clearness over abstract subjects, and making the most difficult points accessible to ordinary capacities.

In 1756 he was called to Edinburgh to fill the chair of chemistry, vacated by the death of Dr. Plummer. While holding this office, he for several years delivered clinical lectures at the royal infirmary. Alston, the professor of materia medica, died in 1763, and was succeeded by Cullen, who, though now in the middle of his chemical course, began his new subject a few days after his nomination. So great was his popularity, that while only eight or ten pupils had entered under Alston, he attracted above a hundred. On the death of Dr. Whytt, in 1766, Cullen took the chair of theoretical medicine, resigning that of chemistry to his pupil Black. The chair of practical medicine next became vacant by the death of Dr. Rutherford. Gregory started as a rival candidate to Cullen; but by an amicable compromise it was agreed that the chairs of theoretical and practical medicine should be shared between them, each lecturing on both subjects; but when Gregory was suddenly cut off in the prime of life, Cullen occupied the practical professorship alone, till within a few months of his death. As a lecturer, Dr. Cullen was the greatest ornament of Edinburgh in the days of its greatest celebrity; and, like all who have excelled in that difficult branch of the profession, he carried with him not merely the regard but the enthusiasm of his pupils. Alibert bears testimony to the impression he made upon the foreign students who resorted to his lectures, and who preserved indelible recollections of his power to convince and to awaken. He lectured from short notes, and this nearly extemporaneous delivery no doubt contributed to that warmth and variety of style which tradition ascribes to his lectures, but which are certainly not the characteristics of his published works. Cullen was great to the last; and his life was extended to the 5th of February, 1790, when, in the words of his French biographer, he closed his glorious career. The following is a list of Dr. Cullen's works: I. First Lines of the Practice of Physic, Edin., 1777, 4 vols. 8vo. This work has been frequently reprinted, and has been translated into French, German, Italian, and Latin. Dr. Cullen's system, as delivered in this book and in his lectures, superseded that of Boerhaave, of which the humoral pathology forms a part. This theory however which supposes diseases to arise from a degeneracy of the animal fluids, not only harmonizes with the instincts of mankind, but has been of late years so confirmed by chemical analysis, that it bids fair to rear up its head again in the schools of medicine. Even Cullen, the great opponent of the humoral doctrines, in his remarks on scorbutics, admits that this disease depends on a particular condition of the fluids of the body. Cullen's division of diseases into four classes is so simple, and yet so ingenious, that it is still adopted by some English lecturers. The first class contains the Pyrexiæ, or febrile diseases; the second, the Neuroses, or nervous diseases; the third, the Cachexiæ, or diseases of an ill habit of body; the fourth, the Locales, or local diseases. To give an example of each, pleurisy belongs to the first class, epilepsy to the second, scurvy to the third, and tumours to the fourth.

The doctrine of *spasm*, which is used by Cullen to solve so many difficulties in the theory of medicine, is no longer universally admitted; but the practice which he founded upon it is so good that we cannot refuse him the honour of having been one of the great improvers of the art of healing; and we concur with that excellent judge, Dr. Thomas Young, who declares the 'First Lines' to be 'an extremely elegant and valuable introduction, rather encumbered than injured by some hypothetical speculations.' (*Medical Literature*, p. 125, 2nd edit.) As Cullen's system is founded on that of Hoffmann, it seems in its turn to have given birth to that of Brown, which is perhaps merely a rude simplification of his great master's theories. [BROWN.]

II. Institutions of Medicine, Edin., 1777, 12mo. This is a treatise on physiology, which was translated into French, German, and Latin.

III. An Essay on the Cold produced by evaporating Fluids, and of some other means of producing Cold, Edin., 1777. This is annexed to Dr. Black's Experiments upon Magnesia alba, &c.

IV. A Letter to Lord Cathcart, president of the Board of Police in Scotland, concerning the Recovery of Persons drowned and seemingly dead. Edin., 1784, 8vo. At the end of the letter is the date 1774, and afterwards there is an extract from the Journals of the Board of Police, also dated 1774.

V. Synopsis Nosologiæ Methodicæ. Edin., 1785, 2 vols. 8vo. The first volume contains the nosologies of Sauvages, Linnæus, Vogel, Sagar, and Macbride; the second contains Cullen's own, which is by far the best. This work was translated into German, with some additions. Leipzig, 1786, 2 vols. 8vo.

VI. A Treatise of the Materia Medica. Edin., 1789, 2 vols. 4to. Translated into French and Italian, and twice into German; one of the German translations is by Hahnemann. Leipzig, 1790, 2 vols. 8vo.

Cullen's clinical lectures were published in 1797, Lond. 8vo. Dr. Young (*Med. Liter.*), after the title of the book, puts the word *surreptitious*, so that it was probably printed from the note-book of some student.

(*The Bee*, by Dr. Anderson, vol. i.; *Lives of British Physicians*; *Biographie Universelle*.)

CULLO'DEN, a house and estate belonging to the family of Forbes, about three miles north-east of Inverness, which has given name to the battle fought April 16, 1746, which put an end to the Rebellion. On the night preceding, the Highlanders had intended to surprise the duke of Cumberland in his camp at Nairn; but this scheme having failed, they took up a position on the Moor of Drummossie, their left wing towards the house of Culloden, where the declivity of the hill was soft and marshy, their right slightly protected by a stone wall. The ground, however, was unfavourable, being on the whole well suited to the operations of cavalry and artillery. Many of the Highlanders were absent, strong reinforcements were daily expected, and those who were present were weakened by hunger and fatigue. The question had been strongly debated, whether it would not be expedient to withdraw to the hills; but the difficulty of finding subsistence for the men and the importance of protecting Inverness determined the prince, Charles Edward, and his councillors to venture a battle, which was fought under every disadvantage, of which not the least was the indecision or incompetency of the leaders. Drawn up in line in the position above mentioned, while waiting for the signal to charge, the Highlanders suffered greatly from the English artillery. Exasperated at last beyond endurance, the centre rushed forward. This, the last charge of the Highlanders under their patriarchal discipline, and with their peculiar arms, is vividly described in Chambers's 'History of the Rebellion,' a small work replete with interest.

'A Lowland gentleman, who was in the line, and who survived till a late period, used always, in relating the events of Culloden, to comment with a feeling of something like awe upon the terrific and more than natural expression of rage which glowed in every face and gleamed in every eye as he surveyed the extended line at this moment. Notwithstanding that the three files of the front line of English poured forth their incessant fire of musketry; notwithstanding that the cannon, now loaded with grapeshot, swept the field as with a hail-storm; notwithstanding the flank fire of Wolfe's regiment, onward onward went the headlong Highlanders, flinging themselves into, rather than rushing upon, the lines of the enemy, which indeed they did not see for smoke till involved among their weapons. It was a moment of dreadful agonizing suspense, but only a moment, for the whirlwind does not sweep the forest with greater rapidity than the Highlanders cleared the line. They swept through and over that frail barrier almost as easily and instantaneously as the bounding cavalcade brushes through the morning labours of the gossamer which stretch across its path; not however with the same unconsciousness of the events. Almost every man in their front rank, chief and gentleman, fell before the deadly weapons which they had braved; and although the enemy gave way, it was not till every bayonet was bent and bloody with the strife.

'When the first line had been completely swept aside, the assailants continued their impetuous advance till they came near the second, when, being almost annihilated by a profuse and well-directed fire, the shattered remains of what had been but an hour before a numerous and confident force, at last submitted to destiny by giving way and flying. Still a few rushed on, resolved rather to die than thus forfeit their well-acquired and dearly-estimated honour. They rushed on, but not a man ever came in contact with the enemy. The last survivor perished as he reached the points of the bayonets.' It is said that, in one place, where a very vigorous attack had been made, their bodies were afterwards found in layers three or four deep.

The right wing of the Highlanders, advancing at the same time, was attacked in flank by the English cavalry and broken; the left withdrew almost without sharing in the fight. About 600 men were killed on each side. The battle, however, was decisive, and the prince fled to the mountains, and some days after gave notice to his partisans to provide for their own safety, declining to continue the contest with 8000 men, who were ready to meet him in Badenoch. The conduct of the English, especially of the duke of Cumberland, after the battle, was disgraced by extreme cruelty.

This memorable event has given occasion to many plaintive popular songs.

> Drummossie Muir, Drummossie day,
> A waeful day it was to me!
> For there I lost my father dear,
> My father dear and brethren three.

(Chambers, *Hist. of Rebellion*; Hogg, *Jacobite Relics*.)

CULM, the stem or straw of grasses.

CULM or **KULM**, one of the thirteen circles into which the government of Marienwerder in the province of Western Prussia is divided. Its area is about 341 square miles, and its population about 33,200. It contains two towns, Culm, and Briesen (about 1150 inhabitants). The country is watered by the Vistula in the west, where the soil is rich and productive: the more elevated parts are also fertile. Much grain, flax, tobacco, and fruit is raised, and cattle-breeding is extensive. The inhabitants are Germans and Poles intermixed.

CULM, the chief town, stands on a hill at the foot of which the Vistula flows, in 53° 21′ N. lat. and 18° 25′ E. long. It was founded by the knights of the Teutonic order in 1229, who instituted an academy or public school here in 1387, for which a gymnasium has been substituted in modern times.

Culm is surrounded by walls, and has 5 Roman Catholic and 1 Protestant church, a chapel, 3 nunneries, an infirmary, a Catholic ecclesiastical seminary, a cadet academy, and 3 other schools. It gives its name to the bishopric of Culm, the diocesan of which has his residence and chapter at Culmsee. The number of houses is about 400, and of inhabitants about 5100. The chief occupations of the townsmen are the manufactures of woollens, tanning, fishing, and trading. Culm was formerly one of the Hanse Towns.

CULM. [ANTHRACITE; BIDEFORD, pp. 388, 389.]

CULMBACH, a bailiwick in the northern part of the Bavarian circle of the Upper Main, the chief town of which bears the same name, and is situated in a fertile and agreeable country on the left bank of the White Main, in 50° 5 N. lat., and 11° 27′ E. long. It is a well-built town of

500 houses and 4500 inhabitants, of whom about
ly are Roman Catholics, the remainder Lutherans.
three churches, a Latin school, hospital, infirmary,
breweries, potteries, a well-known earthenware ma-
ory, tile-houses, tanneries, &c. In the neighbour-
nuch potter's clay is raised; and on a mass of rock
the town stands an old castle, the Plassenburg, at
t used as a house of correction, the prisoners in which
400) are employed in weaving carpets and coarse
ns, and spinning yarn. The outworks of the castle
azed by the French in 1808.

LMINATION (culmen, the summit of a thing). A
lminates, or comes to its highest point, at the moment
t is on the meridian. [TRANSIT, MERIDIAN.]

LTIROSTRES (Ornithology), a name given by
and others to a family of birds consisting of those
which were united under the genus *Ardea* by Lin-
and whose bill is large, long, and strong, and most
ntly pointed also, such as *Cranes, Herons, Storks*, &c.

LVERIN. [ARTILLERY.]

IÆ (Κύμη), an antient town on the coast of Campania,
en miles west by north of Naples, which has been
nce totally ruined. It is said to have been built by
y of Chalcidians from Eubœa, and was one of the
Greek colonies on the coast of Italy. A colony from
originally founded Zancle, afterwards Messene, in
Thucyd. vi. 4), in the eighth century B.C. Cumæ
o have rapidly attained great wealth and importance
h its maritime trade. The Etruscans are said by
ius to have sent an army against Cumæ, which,
r, was defeated near the banks of the Vulturnus.
nus (xii.) describes, from older writers, its former
ur and the wealth of its citizens. According to
iii. 22), the people of Palæopolis, afterwards Neapolis,
so a colony from Cumæ. The story of the Sibylline
eing offered to Tarquin, attributes them to a Sibyl
hetess, who at some remoter period resided at Cumæ.
ne Tarquin the Proud, after vain attempts to recover
reignty, died at Cumæ, where he had sought an asy-
ler Aristodemus, who, himself an exile from Messenia,
ven away by the Lacedæmonians, had come to Cumæ,
rped the sovereign power. We find, about 417 B.C.,
end of the Latin War, the people of Cumæ in-
in the general peace with Capua and other towns
pania. (Livy, viii. 14.) During the second Punic
umæ was still independent, and had its own senate,
nstead of siding with Hannibal, like the Campa-
ook part with Rome, and by its timely information
onsul, Sempronius Gracchus, enabled him to sur-
e Campanians while offering their sacrifices, and to
reat number of them. Upon this Hannibal has-
rom his camp on Mount Tifate to attack Cumæ,
as defended by Gracchus, who repulsed the Cartha-
with great loss. (Livy, xxiii. 35, 37.) Under the
, Cumæ gradually declined from its former import-
he superior attractions of Baiæ, owing to its more
d situation and more genial climate, probably con-
to the decline of Cumæ. Juvenal (*Sat.* 3,) speaks
comparatively depopulated. It suffered afterwards
ars between the Goths and Narses. It was at one
ishop's see, but the town being completely destroyed
aracens at the beginning of the thirteenth century,
was incorporated with that of Naples. The town
ly on the hill, which is rocky and steep, and partly
sea-shore. There are the remains of an amphi-
in the plain towards the south. The temple of
stood in the Acropolis on the hill which is now
occa di Cuma. The ground is here strewed with
e columns, capitals, and fine marble slabs with
nscriptions, half-covered with aromatic herbs, wild
and the leaves of the vine-trees, which grow here
ntly. A farm-house on the hill is still called the
of the Sibyl, and the people pretend to show her
hich are now converted into wine-presses, and her
which is an excavation in the rock, leading to seve-
terraneous galleries half-filled with rubbish, and
extend as far as Averno and Baiæ. Many sta-
ve been found in this neighbourhood. (Ferro, Scotti,
aolini, &c.) From the summit of the rock there is
nsive view, quite different in character from those
e shores of the Bay of Naples. It has a grander but
litary and desolate aspect, extending on one side
e wide expanse of the Mediterranean, and on the other over the lakes of Fusaro, Licoli, and Patria, and the low lands of the coast as far as Gaeta, while to the east the Mons Gaurus separates it from the coast of Pozzuoli and the Bay of Naples. The plain is strewed with the ruins of temples, villas, baths, and sepulchres. Many farm-houses are scattered about; for the country is fertile, though unwholesome in summer. The road from Pozzuoli to Cumæ passes under a fine arch or gateway, inclosed between two rocks, through which the road has been excavated. This arch, probably a work of the Roman period, is now called Arco Felice. (Paoli, *Antichita di Pozzuoli*, &c.) Petronius Arbiter, the discarded favourite of Nero, put himself to death at Cumæ in the manner related by Tacitus, *Annal.* xvi., 19.

CUMANA', a town in South America, in the republic of Venezuela, and the capital of the department of Maturin, 10° 27′ 52″ N. lat. and 64° 9′ 27″ W. long. It stands in an extensive plain, somewhat above a mile from the sea, at the entrance of the gulf of Cariaco: the port is spacious and safe. The gulf of Cariaco, which extends nearly 40 miles east and west, and is from 7 to 9 miles wide, offers excellent anchorage, being in the middle from 60 to 80 fathoms deep, but not so deep towards the shores. The entrance of the gulf, however, is not without danger; a sandbank extends from Punta Araya for some miles, and on the southern coast there is a shoal, called Morro Roxo, which extends 550 feet east and west, and has only from one to three feet water upon it.

The plain on the southern shores of the gulf extends about 10 miles inland to the offsets of the Cerro del Bergantin, which is about 5000 feet high. On this plain rises a group of isolated hills, at the foot of one of which the town is built. On this hill, which is to the south-east of the town, and rises with a steep ascent to the height of about 180 feet, stands the castle of S. Antonio. The town is inclosed on the south and west by a small river, called Manzanares, which divides it from the three suburbs, which are nearly as populous as the town itself. The whole population probably does not exceed 12,000 souls. There is no steeple or dome in the town, and only a few trunks of tamarind, cocoa, and date trees rise above the houses. All the houses are low and slightly built, on account of the frequent earthquakes. The roofs are flat. There is only one parish church and two convents, but no remarkable building. The climate is very hot, but as the air is dry it is more healthy than other places on this coast. The articles of exportation are cattle and dried meat (tasajo), salted fish, and salt. The two first come from the llanos of the Orinoco; the fish is taken along the coast and in the gulf, and the salt prepared on the peninsula of Araya. These articles are principally carried to Caracas and the Windward Islands. Excellent cables of the bark of the mahet are made here. The inhabitants of the town are white and of the mixed race; there are very few negroes. The suburbs are inhabited by the Indians, especially the Guayquerias or Gauyguerias. (Humboldt, Depons.)

CUMANIA, GREAT, an independent district in the western part of the Hungarian province 'beyond the Theiss,' lying between 47° and 47° 40′ N. lat., and 20° 30′ and 21° 10′ E. long., independently of a small district on the right bank of the Körös, and another on the left bank of the same river. The whole surface is a low plain, containing an area of about 424 square miles, and rendered so swampy by the inundations of the Berettyò, Hortobágy, and Kakad, that nearly one half of Cumania is a mere bog. The upper part has been reclaimed to a great extent by the construction of an immense dam in the year 1786. Such portions of the soil as admit of cultivation are extremely productive, and yield plentiful crops of grain, particularly wheat and barley, melons, &c. The meadows and pastures afford excellent fodder and hay, and the rearing of cattle is carried on extensively. The land is full of bulrushes, which, with straw and dung, supply the place of fuel. The population amounts to about 43,000, of whom 5600 are Roman Catholics, and 37,000 Protestants. They are an athletic robust race of men, very fond of rural pursuits. There are no large land proprietors, or feudal lords, as in most parts of Hungary; the people have independent jurisdictions of their own; and send representatives to the Hungarian Diet. They are altogether a rich, happy, and independent people. Great Cumania contains one market-town (*Kardszag Uj Szállás*) 47° 20′ N. lat., and 20° 55′ E. long., on the Sàrret, which has about 1450 houses, and 11,100 inhabitants, and is a thriving mart for the grain, fruit, wine, and cattle, which the exuberant fertility of the surrounding country enables the people to raise), and 5 villages, viz., Turkevi (6450 inhabitants), Madaras (7440), Kunhegges (6160), Kis Uj Szállás (6760), and Kun St. Márton (4970).

CUMANIA, LITTLE. This district, situated between the left bank of the Danube and the right bank of the Theiss, and in the Hungarian province 'this side of the Theiss,' consists of two large and three small tracts of country. The larger tracts adjoin the county of Csongrád on the east, and the counties of Bacs and Csongrád on the south; their northern boundary is the county of Pesth: two small tracts lie to the east of them, the one, next the county of Heves, consisting of two prædia, or privileged settlements; and the other, of Latzháza, with its small territory and two prædia, on the Danube, between Ratzkévy and Bugyi. With the exception of a few sand-hills, the whole of Little Cumania is a complete level. Its area is altogether about 1003 square miles, and its population about 53,000, of whom 27,000 are Roman Catholics, and 26,000 Protestants. The country has no stream whatever but a brook called the Kigyòs, which flows near Szabad and Filep-Szállás, but it is full of swamps and sheets of water. Most of the land is either occupied by these swamps, or partially covered with sand; but the available surface is fertile in grain and contains fine tracts of rich loam. Besides an abundance of grain, Little Cumania produces tobacco and large quantities of excellent melons; considerable herds of cattle and sheep and a great number of horses are reared on its rich pastures. Much limestone and soda are obtained. The Palatine of Hungary is the immediate governor both of Great and Little Cumania; the Kapitányoks, or chiefs of districts, and justices of circles, are subject to his authority. The people of Little Cumania are as independent, robust of make, and rich as their brethren in Great Cumania. Little Cumania contains 3 market-towns, 5 villages, and 37 prædia. The towns are Halas, on the banks of the Halastó, a large sheet of water, in 46° 36′ N. lat., and 19° 32′ E. long. It has a population of about 10,900, and a considerable trade in grain and wine. Felegyháza, to the south-east of Ketskemét, has 12,970 inhabitants, and is embellished with a handsome edifice, where the Cumanians have their courts of justice and keep their archives. Near this place several Roman urns have been dug up. There is an extensive traffic here in grain, fruit, wine, and cattle. Kun Szent-Miklós lies on the Baker, to the south of Pesth, and has about 4300 inhabitants.

CUMBERLAND, one of the northern counties of England, lies between 54° 6′ and 55° 7′ N. lat., and 2° 13′ and 3° 30′ W. long. On the north it is bounded by the Solway Frith and Scotland for 30 miles; on the south by Westmoreland for 48 miles, and Lancashire 21 miles; on the east by Northumberland for 51 miles, and Durham 7 miles; and on the west by the Irish Sea 67 miles. The extreme length of the county is about 74 miles, and its greatest breadth 34 miles. Its circuit is 224 miles, and the area 1523 square miles, or 974,720 acres. According to the agricultural survey published in 1793, there were 470,000 acres of old inclosed land; 150,000 acres of common that might be brought into cultivation, 342,000 acres chiefly occupied by mountains, and above 8000 acres by lakes and rivers.

In consequence of the cultivation of extensive commons and waste lands, the aspect of the country has been completely changed. Without reverting to the survey made in the time of William the Conqueror, when there was 'a goodly great forest, full of woods, red deer and fallow, wild swine, and all manner of wild beasts, called the Forest of Englewood;' or to the time of Edward I., when that king, during a few days which he spent in Cumberland for the purpose of hunting, is said to have killed 200 bucks in the same forest; even within half a century, and since the last agricultural survey, more than 200,000 acres have been inclosed. Many of the commons, which previously afforded only a scanty pasturage to a few half-starved sheep and cattle, are now covered with fertile corn-fields and profitable herbage, have proper hawthorn fences, good roads, and commodious farm-buildings. A scarcity of wood forms a peculiarity in the general aspect of the country, for which two reasons may be assigned—the lords of some manors claim the wood, and the farmers dislike it on account of the injury which it does their corn-crops. In area Cumberland ranks the twelfth county in England, and in population the twenty-eighth. In 1821 the population was 156,124. In 1831 it amounted to 169,681—81,971 m and 87,710 females.

Surface, Hydrography, and Communications.—The and south-west parts of the county are very mountain rugged, and uneven; the north and north-west parts low and flat, or gently undulating. Hills, valleys, ridges of elevated ground occupy the midland part. traveller, the mountainous district in the south-west is most interesting. This part contains Saddleback, Skid and Helvellyn, and the lakes of Ullswater, Thirlmere, went-water, and Bassenthwaite. This magnificent as blage of lofty mountains and beautiful lakes ann attracts tourists from all parts of the kingdom. Sever the other districts, though not mountainous, are hilly, present an endless variety of landscape; some of the va are traversed by rivers, and afford perhaps a greater va of delightful scenery than any other county. Beside lakes already mentioned, there are several of smaller equally celebrated for their diversified and picture scenery. Buttermere, Crummock-water, Lowes-water, nerdale, Wast-water, and Devock-lake, are frequently vi by travellers in their excursions. There are also se tarns, or small pieces of water, the chief of which are water, not far from Uldale; Burn-moor-tarn, at the of Miterdale; Tarn Wadling, near High Hesket; Ta tarn, in the parish of Hayton; and Martin-tarn, in th Wigton.

The following is a tabular view of the principal lak Cumberland.

LAKES.	Nearest Market-towns.	Length in miles.	Breadth in miles.	Depth in feet.	He feet the
Ullswater . .	Penrith	9	1	210	
Thirlmere . .	Keswick	2¼	1	108	
Derwent-water	Ditto	3	1½	72	
Bassenthwaite	Ditto	4	1	68	
Buttermere .	Ditto	1½	½	90	
Crummock .	Cockermouth	3	¾	132	
Lowes-water .	Ditto	1	¼	64	
Ennerdale .	Whitehaven	2½	¾	80	
Wast-water .	Ravinglass	3	½	270	

The most remarkable phenomena connected with lakes are the Floating Island and Bottom-wind, bot which are occasionally observed at Derwent-water, neither has yet received a satisfactory explanation. the lakes are well stocked with fish, particularly with t pike, and perch. Ullswater, Ennerdale, Crummock, Buttermere, contain char; the first of these lakes abo with eels and skellies. Salmon pass through Bassenthw lake to deposit their spawn in the rivers Derwent Greta. Trout and eels are found in the tarns. Tarn W ling produces some of the finest carp in the king There are several fine waterfalls, of which the follo are the principal, with their respective situations heights:—

	Fe
Scale Force, near Buttermere . . .	1
Barrow Cascade, two miles from Keswick .	1
Lowdore Cascade, near Keswick . .	1
Sour Milk Force, near Buttermere .	
Airey Force, Gowbarrow Park . .	
Nunnery Cascade, Croglin . .	

The following are the names and altitudes of the prin mountains, and the districts in which they are situated:

		Fe
Scaw Fell (high point)	Eskdale . .	31
Helvellyn .	Keswick . .	30
Skiddaw .	Keswick . .	30
Bow Fell .	Eskdale . .	29
Cross Fell .	Aldston . .	29
Pillar .	Wast-water .	28
Saddleback .	Keswick . .	27
Grassmere Fell .	Keswick . .	27
High Pike .	Hesket New Market .	21
Black Comb .	Duddon mouth .	19
Dent Hill .	Egremont . .	11
Scilly Bank .	Whitehaven .	50

The offsets of the western or Skiddaw range of primi and transition mountains extend within five miles of lisle, and four miles of Wigton. Those of the second (Cross-fell, or Penine chain) do not reach quite so far n as Tindale-fell, near Brampton.

The principal rivers in Cumberland are the Eden, the Esk, and the Derwent. The Eden enters the county on the south, where it unites with the Eamont, runs to the east of Penrith, passes Kirkoswald, Armathwaite, Corby, Warwick-bridge, and Carlisle, and discharges itself into the Solway Frith, near Rockliff, where it forms a fine æstuary. The scenery along the course of the Eden in this county, which is about thirty-five miles, is very varied and beautiful. The mansions and pleasure-grounds of Skirwith Abbey, Eden-hall, Nunnery, Armathwaite, Low-house, Corby Castle, Warwick-hall, and Rickerby, adorn its banks.

The Esk enters Cumberland from Scotland, and passes Kirk-Andrews and Netherby, flowing through a beautiful valley in a south-west direction to Longtown. After receiving the Line, which is formed by the junction of two streams arising near Christenburgh Crags, called Black Line and White Line, it falls into the Solway Frith, near Rockliff Marsh. Its course in this county is about 10 miles.

The Derwent takes its rise from Sparkling-tarn, among the crags at the head of Borrowdale, passes through Styhead-tarn, and forms the lake of Derwent-water, at Keswick, where it is joined by the Greta. It then pursues its course to Bassenthwaite and Cockermouth. At the former place it forms Bassenthwaite-water, and at the latter it receives the Cocker. After running about 33 miles and passing many pleasant seats and villages, it falls into the sea near Workington.

There are numerous streams of smaller size. The Caldew issues from the south-east side of Skiddaw and Caldbeck-fell, from whence it takes a northerly direction. At Haltcliff Bridge it enters a subterraneous passage, in which it runs about four miles. The river emerges at Sebergham, then passes Rose Castle and Dalston, and after a course of about 20 miles, in which it puts in motion several corn and cotton mills, print works, &c., joins the Eden at Carlisle. The Peteril rises in the parish of Greystock, near Penruddock, runs by Plumpton, Barrock-lodge, Wreay, Woodside, Newbiggin-hall, and Upperby, and enters the Eden near Carlisle. The Irthing runs several miles in a southern direction between this county and Northumberland, passes Gilsland-spa, about a mile from which it enters Cumberland, then turns westward by the two Dentons, Naworth Castle, Lanercost, Walton-house, Irthington, and Edmond Castle. After a very winding course of about 13 miles in this county, in which it receives King, Cambeck, and several lesser brooks, it falls into the Eden near Newby, above which place it is joined by a small river called the Gelt, which rises in Croglin-fell. The Liddel rises in Scotland, and forms the boundary for about eight miles between that kingdom and Cumberland. It joins the Esk near the entrance of that river into the county. The Sark runs between Cumberland and Scotland for about six miles near Solway-moss. The Wampool rises in Brocklebank-fells, passes Crofton-hall, and at Dockray joins the Wiza, which springs near Rosley, and runs by Old Carlisle and Wigton. The Wampool runs past Glamblesby to the sea, which it enters near Kirkbride. The Waver has its origin in Brocklebank and Caldbeck fells, and takes a similar course to the æstuary. By diverting the channels of these two rivers near their termination, 4000 acres of land might be reclaimed at small expense. The Ellen rises from Caldbeck-fells, and passes by Ireby, Bolton, Aspatria, Ellenborough, and Nether-hall, and enters the sea at Maryport after a course of about 18 miles. The Cocker takes its rise near the black-lead mines, in Borrowdale, flows through the lakes of Buttermere and Crummock, unites with the stream of Lowes-water, and falls into the Derwent at Cockermouth. The Greta has its principal source in a curious lake or tarn on Saddleback. At Threlkeld it receives a stream from the vale of St. John and Thirlmere, and then runs to Keswick, near which place it joins the Derwent. The Eamont flows from the lake of Ullswater, which is partly situate in Cumberland and partly in Westmoreland. It divides the two counties in its course, passes Dalemain, Carlton-hall, and Brougham-hall, and joins the Lowther and the Eden, the former about a mile to the west, and the latter about five miles south-east of Penrith. The Duddon rises in Cumberland, near the junction of the county with Westmoreland and Lancashire, and in its course to the sea of about 20 miles forms the boundary between the first and last mentioned counties. A large tract of sand here seems also capable of being recovered from the sea. The Croglin rises on Thackthorn-fell, contributes to the beautiful and romantic scenery of Nunnery and Staffold-hall, near which places it falls into the river Eden. The Nent rises in the south-east extremity of the parish of Alston, and joins the South Tyne near the town of Alston. The SouthTyne has its source in a swamp or bog-ground about seven miles east by south from the summit of Cross-fell: it runs by Garrigill and Alston, and a little below the latter place enters Northumberland. The Tees rises in the same swamp, about a mile from the source of the South Tyne, and for nearly four miles forms the boundary between Cumberland and Westmoreland. Besides these, there are the Carn, which rises from King Harry; the Ehend (or End) from the lake of Ennerdale; the Irt, Mite, and Esk, and numberless small rivulets and brooks. The larger rivers abound with salmon, trout, brandling, and various other kinds of fish, and the smaller with trout and eels. Salmon fishing commences in the Eden, January 1st; in the Solway Frith and Esk, March 10th. It closes in all the Cumberland rivers on the 25th of September, except the Derwent, in which it continues from the 10th of February to the 10th of October. Salmon taken in the Eden is often sold to purchasers in London, Liverpool, and Manchester, particularly when it first comes in season. Game, especially grouse, is sent in great quantities to the south of England.

The ship canal from Carlisle to the Solway Frith is the only canal in the county. The Newcastle and Carlisle railroad, which was opened from Carlisle to Blenkinsop in July, 1836, (and not from Newcastle to the latter place in 1816, as is stated by a misprint in the article CARLISLE,) is the only railroad for the conveyance of goods and passengers: this railway and the Carlisle canal will complete the communication between the east and west seas. A survey is now making for lighting and buoying the Solway Frith, which will be a great advantage to its navigation; and floating-docks are about to be constructed at Port Carlisle, a new and flourishing little seaport at the junction of the canal with the Frith, from whence two steamers sail weekly to Liverpool. A railroad has lately (1837) been projected from Carlisle to Maryport, and nearly all the shares are taken. Two important turnpike-roads cross the county: one passes from east to west and the other from south to north; the latter is one of the principal roads between London and Glasgow and Edinburgh, and enters the county near Penrith, a market-town, 18 miles from Carlisle. It passes through that city, and then through Longtown, nine miles north of it, to Edinburgh; previously giving off a branch three miles north of Carlisle to Glasgow, by Gretna, which crosses the Esk by a cast-iron bridge. The road from east to west extends from Newcastle to Carlisle 56 miles, and from the latter place to Whitehaven 41 miles. It passes through Brampton, nine miles east of Carlisle: on the west, through Wigton, 11 miles, Allonby 11, Maryport 5, Workington 6, and Whitehaven 8 miles. There is a turnpike-road from Penrith to Alston 20 miles; and one also from the former place to Keswick 18 miles, from thence to Cockermouth 13, to Whitehaven 13 miles. From Wigton there is a road extending to Cockermouth 16 miles; one also to Keswick, through Ireby, 22 miles; and another to Penrith, through Sebergham, 21 miles. From Whitehaven to Duddon Sands, on the road to Ulverston, are Egremont, 5 miles, Calderbridge 4, Ravenglass 7, Bootle 6, Whicham 4, and Duddon-bridge 6 miles. A turnpike-road extends from Brampton to Longtown 11 miles: there is one also from Keswick to Ambleside 16 miles, which passes through a pleasant and picturesque country.

Geological Character.—Cumberland is situated in the red marl district, which lines the western base of the great chain of mountains denominated the British Apennines, or the Back-bone of England extending from the Tweed into Derbyshire. This district extends in a northerly direction from the north-west corner of the Cheshire plain, along the western coast of Lancashire, into Cumberland and the south of Dumfriesshire. White and red sandstone, but chiefly the latter, may be found almost everywhere within the limits described. St. Bees' Head is entirely composed of new red sandstone. At Whitehaven the red marl formation is seen reposing on the coal formation, covered by the marl-beds containing gypsum: the same formation is seen filling up the great space between the Cumberland group of mountains and the British Apennines at Cross-fell. At Newbiggin and Coat-hill, near Carlisle, gypsum is found lying in red argillaceous marl, between two strata of sandstone: the former quarry is much wrought, and gypsum is exported in great quantities from Carlisle.

At Barrock, three miles to the south of Newbiggin, is a large rock of greenstone, much used on the public roads. A trap or basaltic rock is also observed near Berrier, at the hill called Binsey, and also on the north side of the Derwent, near Cockermouth. The primitive and transition group of the Cumbrian mountains consist of granite, sienite, hypersthene, greenstone, slate, old red sandstone, and mountain limestone. A grey kind of granite is found in the bed of the Caldew, on the north-east side of Skiddaw; and also in a branch of the river Greta, between Skiddaw and Saddleback. Sienite is met with at Irton-fell, Muncaster-fell, and Nether Wasdale; and hypersthene, in conjunction with quartz and felspar, commonly referred to the class of sienite, at Carrock-fell. A reddish felspar porphyry is found on Ambroth-fell and on both sides of St. John's Vale, near Keswick. Varieties of slate, intersected by dykes of trap or greenstone, constitute the great mass of Skiddaw, Saddleback, and the adjacent mountains. The common stone of the Keswick district is called blue rag, schistic earth, or whintin. At Borrowdale, Eskdale, and Patterdale, Scaw-fell and Helvellyn, and some adjacent places, grey slate is associated with hornstone, amygdaloid and argillaceous porphyry, constituting the towering crags and lofty precipices of these districts. Many of the cataracts of the lakes fall over rocks of this description. Quartz, garnets, calcareous spar, chlorite, epidote, and sometimes agate, opal, and chalcedony, are found in these rocks. The old red sandstone occurs near Melmerby. Metalliferous limestone, productive of lead ores, abounds in the mountains of the east, and also of the west of the county. Boulder-stones, from the granite rocks of Dumfriesshire, occur in the eastern parts of the county; and some, of the granite of Caldew and of the sienite of Carrock, near Carlisle. Shap-fell boulders are found on the shores of the Solway Frith; and boulders from the sienite of Buttermere and Ennerdale, on the west coast of the county.

The minerals are silver, copper, lead, iron, plumbago, limestone, and coal. The principal lead-mines are situated at Alston, and are almost exclusively the property of Greenwich Hospital, to which institution they were appropriated by act of parliament on the attainder of the earl of Derwent-water. The number of mines now working is about 40, some of which are very productive. Silver and copper are found in some of the mines in the same veins with the lead-ore. Silver and lead are at present got in great abundance at Greenside and Eagle-cragg in Patterdale. Veins of lead-ore have been found and worked between Skiddaw and Saddleback, in Buttermere, Newlands, and Thornthwaite. There are copper-mines at Alston, Caldbeck, and at Wythburn. There is one also below the level of Derwent-water, and another in the parish of Lowes-water. A very rich vein of gold is said to have been discovered at Newlands by a German, in the time of Queen Elizabeth, but the working was discontinued in consequence of a law-suit between that queen and the earl of Northumberland, then the lord of the manor of Derwent-fells. Iron-ore is raised in great abundance near Egremont; the thickness of the band of ore, which is hard solid metal, is said to be between 24 and 25 feet. The quantity of iron-ore shipped from Ulverston and Barrow is very great: 300 carts of ore are taken daily from Lindale to Barrow for exportation. The ore of this county produces upwards of double the quantity of metal that is got from iron-ore in general. Coal is worked to a large amount at Whitehaven, Workington, and in the vicinity of Maryport, from whence it is exported to Ireland and the west of Scotland. The eastern part of the county also abounds in coal, particularly Tindale-fell, Talkin, and Blenkinsop, which produce the chief supply for Carlisle, Brampton, Penrith, and the intermediate country. Some of this coal is now exported at Port Carlisle to Ireland and Scotland. There are collieries at Gilcrux, Arkleby, Oughterside, Bolton, and Hewer-hill. Limestone is very abundant in many parts of the county. In some places it is burnt in great quantities for exportation, particularly to the west of Scotland. At Catlands the limestone is overlaid by the coal measures on all sides. Plumbago, or black lead is found, in irregular masses in a rock of grey felspar porphyry at Borrowdale near Keswick. This mine was formerly opened at stated periods, to prevent a superabundance in the market; but latterly, on account of the demand being greater, and the mine less productive, it has been worked for a succession of years. A little cobalt has been got at Newlands, and antimony near Bassenthwaite. Lapis calaminaris, small quantities of manganese, galena, iron pyrites, and spar of various kinds and of different colours and forms, are found in several places. Slate of a pale blue colour and of the finest quality is plentiful in Cumberland, particularly in the neighbourhood of Keswick and Ullswater.

Climate.—In consequence of the great extent of coast and the numerous high mountains, the climate is various. The mountains and high grounds are cold and piercing; the lower parts are mild and temperate: the whole county is exposed to wet and variable weather, particularly in the autumn, yet it is healthy, and many instances of longevity occur. The oldest inhabitant on record is John Taylor, of Garrigill, who died in 1772, aged 135 years. Mr. R. Bowman, of Irthington, another extraordinary instance, died June 13th, 1823, in the 118th year of his age; and it was a singular coincidence, that the oldest tree in Cumberland, an oak, of which there is an authentic account of its standing 600 years in Wragmire-moss, Inglewood Forest, fell from natural decay on the same day. With regard to the salubrity of the climate, the results of the observations made at Carlisle in 1787 by the late Dr. Heysham, are said to represent the lowest mortality ever recorded under any circumstances. How far that city may deserve this high character, since it has become a manufacturing town, has not been ascertained.

The annual mean quantity of rain at Carlisle is about 30 inches; at Wigton, 34 inches; at Whitehaven, 50 inches; and at Keswick, 68 inches. April on an average is the driest month of the year. July, August, September, and October, are wet months: about twice as much rain falls in each of these months as in the month of April; and about one-third less rain falls in the first six months of the year than in the last six months.

Agriculture, &c.—The soil of this county varies much; it often differs in the same parish, and sometimes even in the same field. The mountainous districts are bleak and barren; the most prevalent soil being mossy or dry gravel covered with heath. They are chiefly used as sheep pastures and preserves for moor-game. Some good land of dry brown loam is found in the valleys, and on the sides of some of the smaller mountains. On the margins of the rivers is much valuable ground, consisting of rich brown loam. On the coast the soil is light sandy or gravel. The lowland country, extending from Carlisle in every direction for many miles, is fertile, though a considerable portion of it is cold wet loam and black peat earth: this land has latterly been much improved by draining, which is now carried to a very great extent. There is a good deal of fertile clayey loam in the neighbourhood of Wigton. Sand and light loam prevail near Brampton, and likewise near Penrith. In the west of the county there is some wet soil on a clay bottom, and also some hazel mould. The subsoil in many places is a wet steril clay. About two-thirds of the county are held under lords of manors, by what is called customary tenure, a species of feudal oppression which subjects them to the payment of certain annual rents and fines, and of arbitrary fines and heriots, with other boons and services, on alienation, or on the death of the lord or tenant. A part of the county is freehold, a part leasehold under the bishop of Carlisle, the dean and chapter of Carlisle and others, and a small part is copyhold. The tithes are generally paid in kind, and have been great obstacles to improvement. The agriculture of the county has improved considerably within the last thirty years, and great quantities of corn and produce of various kinds are now exported. The chief exports are from Port Carlisle, Whitehaven, Workington, and Maryport, and consist of cattle, sheep, poultry, grain, potatoes, butter, bacon, &c. The land being divided into small farms, the dairies are necessarily on a small scale, though their produce is excellent, and bears a high price in the market. Many of the farms do not exceed 100 acres, and some are not more than 30 or 50 acres. They are possessed on verbal or written contracts, or on very short leases. There are very few farms let on leases of 14 or 21 years. Many persons, provincially called *lairds* or *statesmen*, occupy their own lands, which, in some instances, have passed for several centuries in a regular line of descent in the same families. Some of these persons have an air of independence which forms a peculiar trait in their character. A small part of the land, in some places, lies in open town fields, which cannot have the benefit of the common improvement in husbandry. This land usually lies in ridges of variable width, upon which the grazing cattle that are herded do frequent injuries to the crops. In other places there are certain common lands that are annually stinted with cattle and horses, on a fixed day, by the owners or occupiers. These lands are always in grass. In high and mountainous districts the chief object of the farmers is their sheep stock, though of late years a considerable quantity of high-lying land has been brought into cultivation, which, on account of the steep declivities, is very laborious. In some of these places the climate is cold, the corn backward, and the harvest late. The valleys and low ground are cultivated chiefly for grain, and produce excellent crops of wheat, barley, and oats; these are alternated with turnips and potatoes or fallow. Some of the lands that are well supplied with water are kept as meadows or pastures for dairies, and for rearing and fattening cattle. Although the Cumberland farmers are in general good agriculturists, and have their lands clean and in good condition, many of them take too many white crops, particularly on new inclosures, which impoverish the land; they also keep their lands too long in tillage, without renewing by laying down.

Candlemas is the usual time for entering upon farms, and the rents are paid half yearly, in even and equal portions, at Lammas and Candlemas. The buildings and premises, in many instances, are delivered in good repair to the farmer, who at his own cost amends and keeps them in sufficient repair, except the roof and main timbers, which are repaired by the landlord. In other instances, the tenant lends all materials wanted for repairs, and finds meat and lodging to the work-people. The landlord pays the wages of the work-people, and the cost of the materials. The modern farm-houses and buildings have a handsome appearance, being generally built of stone, and roofed with blue slate. The old farm-buildings and cottages have clay or mud walls, and are thatched with straw. The following rotation of crops is often adopted on good soils. After the land has been in grass two or three years, it is ploughed up, and one crop, and in a few instances two crops of oats, are taken, then a fallow, or green crop of turnips or potatoes, which is followed by a crop of wheat, and this last by a crop of barley, when the land is laid down with clover and grass seeds. A crop of hay is taken the ensuing year, and then the land is kept in grass. On poor and light soils, only one white crop is taken after a green crop or fallow, and the land is laid down with seeds. Beans and peas are occasionally cultivated, but less frequently than in the south of England. The farmer cuts almost every sort of grain with the sickle. He does not sell or dispose of any hay or straw, but consumes them upon the farm; he keeps up his usual quantity of stock until the end of his term, and leaves all the manure, ashes, and compost, that may arise or be made upon the premises, for the benefit of the succeeding tenant. At the expiration of the term, he is allowed to sell or remove the remainder of his crop. He does not plough or convert into tillage more than one half of the arable lands in any one year, except some small part for soiling. Such part as shall be mown twice he covers with manure, compost, or ashes. When the land is in fallow for wheat, and also before it is sown with barley, and with clover seeds and grass seeds, it is well manured. In the former state, it has about twenty, and in the latter, ten cart loads of manure per acre. The quantity of clover seeds is usually six pounds of red and three pounds of white clover seeds to each acre. The farmer does not depasture any horses or cattle upon the seeds after the barley is reaped. In the last year of his term he summer-fallows, plants with potatoes or sows with turnip seeds a certain number of acres (perhaps a tenth part of the arable land), which he is required to manure well. The potatoes or turnips are pulled up and carried away from the land on or about the tenth of October preceding the expiration of the term, after which time the succeeding tenant is at liberty to enter upon this land, and to plough, manure, and sow it with wheat or other grain, and also to take the manure then upon the premises for the manuring of the land. The farmer is required not to do any injury to this wheat land by depasturing horses, cattle, or sheep upon it. Hay, straw, and clover are sold by some farmers in the vicinity of market-towns, from which ashes and manure are taken to the farms. When land is drained with tiles, the landlord, in many instances, finds the tiles only; in others, he is also at the expense of cutting and making the drains, and the tenant lends the tiles, sets them, and fills and covers the drains in a proper and satisfactory manner. Lime is much used in many places, and lately bone-dust has been employed by a few persons. The variety of oats called potatoe-oats, which is now so generally cultivated in every part of the kingdom, was first discovered by a farm-servant of Mr. Jackson of Arkleby, in this county, in 1778. The horses in common use are light and of rather small size. Waggons are rarely, if ever, employed by the farmer. A single horse-cart, and a pair of horses to a plough are in general use. Several improved implements of husbandry have been lately adopted. Scufflers are used by a few persons. Thrashing-machines and drills of various kinds are now become common on the larger farms. There is a great variety of cattle and sheep. Many persons have the improved short-horned cattle; some have galloways; and a few prefer cattle of the long-horned breed. The last, which was, not many years ago, the most common, is now superseded by the two former. A peculiar breed of sheep, called *Herdwicks*, from their being farmed out to herds at a yearly sum, is met with on the mountains, at the head of the Duddon and Esk rivers. The ewes and wethers, and many of the tups are polled; their faces and legs speckled, and the wool short and coarse. They are lively and hardy little animals. The tups are in great request to improve the hardiness of other flocks. There are four agricultural societies and several cattle shows in the county, which give a stimulus to agriculture, and encourage improvements in the breed of live stock, by distributing rewards and premiums. The late Mr. Curwen of Workington-hall deserves mention as one of the greatest promoters of agriculture in Cumberland. At Carlisle, Whitehaven, and Penrith, are horticultural and floral societies, which are well supported, and are of service in exciting attention to the cultivation of fruits and flowers. About ten acres of boggy land near Tarn Wadling are kept exclusively for the production of cranberries, which are uncommonly fine and much esteemed.

Cumberland farmers are a temperate, social, and intelligent people. They are strong and robust, and generally very frugal and industrious. They rise early and labour hard. They wear clogs, and coarse plain dresses, take oatmeal porridge to breakfast, and often bacon and salt meat to dinner. Their bread is commonly made of barley, or of barley and rye. In some places, oaten bread formed into thin cakes, and *scons*, or unleavened cakes, are chiefly used. Milk, potatoes, and skimmed milk cheese are universally consumed. Tea, wheat bread, and animal food are now fast superseding these simple articles of diet. About half a century ago they wore *kelt* cloth, which was of a grey colour and home spun, and hence the name of *grey-coats*, which the Cumbrians received. At present home-spun clothes are only worn by a few persons in the mountain districts. The Cumbrians have been undeservedly said to be litigious, which has arisen from the minute division of property and extensive commons occasioning frequent law-suits. The peasantry pay great attention to the education of their children. In some rural districts, where the quarter pay is not adequate to support the master, he is allowed a *whittle-gate*, or the privilege of dining in rotation with the parents of his pupils—a custom which formerly prevailed also in some places with the poorer clergy. Farm-servants are hired at Whitsuntide and Martinmas, at the fairs held at the larger market-towns. They stand in the market-places, and are distinguished by having a piece of straw or green branch in their mouths. Men get, for half a year, which is the general term, from 4*l.* to 8*l.*; and women from 2*l.* to 4*l.* After the hiring is over, the remainder of the day and of the evening are dedicated to mirth and festivity. Cumbrian peasantry have various festive meetings, called the *kirn*, or harvest-home, sheep-shearing, merry nights, and upshots. Bridewains and bidden-weddings are still held in some parts of the county. Wrestling, running, and leaping are the favourite amusements and athletic exercises of the peasantry.

The following are the principal fairs in Cumberland. Noted horse-fairs are held at Cockermouth, February 18th; Wigton, February 20th; and at Longtown, Thursday before Whitsuntide. Fairs for cattle and horses, at Rosley, Whit-Monday, and continued every Monday fortnight until Michaelmas; Abbey-Holme, Thursday before Whitsuntide, and October 29th; Carlisle, August 26th and September 19th; Hesket-New-market, the first Friday in May, and continued every fortnight afterwards until Whitsuntide. Ireby, February 21; Alston, last Thursday in May, Friday before September 27, and first Thursday in November. Fairs for cattle, Wigton, April 5; Brampton, the second Wednesday after Whitsuntide, and the second Wednesday in September, April 20, and October 23; Bootle, April 5 and September 25; Egremont, the third Friday in May, and September 18; Workington, May 18 and October 18; Keswick, the first Thursday in May, and every Thursday fortnight for six weeks, the Saturday before Whitsuntide, and on the Saturday nearest the festivals of St. Michael and St. Martin, or on the festivals if they happen on Saturday; the Martinmas fair is noted also for rams and cheese. Sheep-fairs are held at Low-wood-Nook, August 20; Uldale, August 29; Nether Wasdale, first Monday in September; Borrowdale, first Wednesday in September; Threlkeld, first Thursday in September; Ennerdale, second Tuesday in September; Ireby, October 18; Hesket-New-market, last Thursday in August, and second Thursday in October; Lowes-water, second Friday in September; and Newlands. the last Friday in September.

Cumberland has four newspapers; two are published at Carlisle, and two at Whitehaven weekly.

Divisions, Towns, &c.—This county is divided into six wards, or hundreds, known by the names of Allerdale above Derwent, Allerdale below Derwent, Derwent, Cumberland, Leath, and Eskdale wards. It contains one city, Carlisle; the parliamentary boroughs of Cockermouth and Whitehaven, and 17 market-towns.

Allerdale above Derwent is situate in the south-west of Cumberland, comprehending many of the mountains and lakes, as well as the principal seaports. It contains six market-towns: Whitehaven, Workington, Harrington, Egremont, Ravenglass, and Bootle.

Whitehaven is a well-built seaport of considerable importance, situate in a creek on the western shore. In the reign of Queen Elizabeth it was only a small fishing village, containing six houses. In 1831 the township population amounted to 11,393, and the parish of St. Bees, including Whitehaven, contained 20,012 inhabitants. The streets are regular, generally spacious, and cut each other at right angles. In the vicinity of the town and also immediately under it are extensive collieries. In the year 1791 18 houses were injured, and the inhabitants greatly alarmed, by the falling in of some old coal works. Some of the collieries are wrought to the extent of two miles under the sea, so that the water above them is of sufficient depth for ships of great burden. Some of the coal-seams are 8 and some 11 feet thick. From the pits to the quays are railways and wooden galleries, at the end of which the contents of the waggons are shot down large wooden trunks called hurries into the holds of the vessels. The harbour is commodious: some additions lately made have not answered, and are about to be altered. Several improvements in the harbour entrance are contemplated. A narrow vale extending to the village of St. Bees, supposed to have been formerly occupied by the sea, might be cut through and made navigable for large vessels at a moderate expense; but this project seems to be lost sight of. There are four batteries for the protection of the port, which were repaired after the hostile attack of the notorious Paul Jones in 1771, but are now in a state of decay, being no longer necessary. At the entrance of the harbour are two lighthouses. The manufactures are of sail-cloth, linen, check, earthenware, candles, soap, &c. There are also large roperies and yards for ship-building. The trade chiefly consists in the exportation of coal, lime, iron, freestone, gypsum, and grain, and importations of West Indian, American, and Baltic produce. Tea has lately been imported direct from China. Upwards of 200 vessels are employed in the export of coal. Steam vessels sail weekly between this port and Liverpool, and occasionally to Dublin, Isle of Man, and Dumfries. There are three churches or chapels; seven meeting-houses for religious worship; marine, national, Sunday, and other schools; an infirmary; house of correction; mechanics' institution; custom-house; theatre; salt-water baths; workhouse; public office; news-room and library. There is a neat market-house in a handsome area. The market-days are Tuesday, Thursday, and Saturday—the principal market is on Thursday. A fair or great market, August 12th, has been nearly discontinued. At the approach from the north is a handsome portico of red freestone, above which is a railway for coal waggons; and at the S. E. end of the town is an elegant mansion of the earl of Lonsdale, called the Castle. Dr. Brownrigg, an eminent chemist and mineralogist, who died in 1800, practised medicine here. Whitehaven sends one member to parliament. In 1836 the number of voters registered was 476. A few miles from the town are the clerical institution and the free-school of St. Bees (the latter founded by Archbishop Grindall, a native of the parish), and the lofty promontory of St. Bees' Head, upon which is a lighthouse.

Aggregate amount of Shipping and Tonnage belonging to the Ports of Cumberland.

Ports.	April, 1810.		January, 1822.		January, 1828.		January, 1836.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Whitehaven	188	29,342	181	26,220	195	30,960	450	66,742
Workington	134	18,941	117	18,094	126	19,930		
Maryport	101	13,580	128	18,495	134	17,136		
Harrington	42	4,960	38	4,976	43	5,479		
Carlisle	.	..	35	2,413	39	2,706	39	3,419
Total	465	66,823	499	70,198	537	76,211	489	70,161

Workington stands on the south bank of the Derwent, which is navigable for ships of 400 tons burden, and falls into the sea about a mile distant. Coals constitute the chief export; timber, cattle, bar-iron, and flax, the chief imports. Nearly 100 vessels are employed in the coal trade to Ireland. Sail-cloth and cordage are the principal manufactures. Ship-building is carried on to a considerable extent. A few years ago a patent Leghorn manufactory, and a joint-stock banking company were established. There are two churches; five chapels for dissenters; a national, an infant, and Sunday schools; subscription library; dispensary; assembly-room; theatre, and custom-house. Township population in 1831, 6415. The market-days are Wednesday and Saturday· on the former day is the principal market. It is remarkable that this is the only large market-town in the county at present (1837) not lighted with gas.

Workington-hall, on the east side of the town, afforded an asylum to Mary Queen of Scots, when she landed at Workington. At Seaton, a little above Workington, are extensive iron-works, and the antique ruins of Borough walls.

Harrington is a small flourishing seaport between Whitehaven and Workington. The harbour is well constructed, and the trade gradually increasing. Coal is exported from this place to Ireland, and lime to Scotland. In the former trade upwards of 40 vessels are employed, and in the latter are several hundred sloops. Here are two yards for ship-building, a ropery, and a vitriol and copperas manufactory. The parish church is a plain structure, without a tower. There are two Methodist chapels, a Lancasterian school, and a clothing society. Parish population in 1831, 1758. This place and the manor gave name to the antient and baronial family of Harrington, and was possessed by Lady Jane Grey. Iron-stone and fire-clay are found in the vicinity: about 2000 tons of the former are annually exported.

Egremont is a neat little town five miles from Whitehaven, and about two miles from the sea. It is said to have been an antient borough, which was disfranchised at its own petition to avoid the expense of representation in parliament. The manufactories are of check, linen, paper, leather, and sail-cloth. There are a parish church, Methodist meeting-house, a national school, and a poor-house. Saturday is the market-day. Parish population in 1831, 1741, which is the same number as returned by the census of 1821. It is from this place that the earl of Egremont takes his title. On the west side of the town are the ruins of an old castle, supposed to be coeval with the entry of the Normans into Britain. In the parish are some productive iron-mines. The seats of Gill-foot and Hale-hall are near to the town. Calder-abbey and Ponsonby-hall are at a short distance.

Ravenglass is a small market-town and seaport, situated at the confluence of the Esk, Mite, and Irt. There is a fair held here, with very singular customs and ceremonies, August 5th. It has a market on Friday; a large workhouse, and an endowed school. Near this place are Muncaster-house, and the ruins of Walls Castle. Oysters abound on the coast between this town and

Bootle, which is one of the smallest market-towns in the kingdom, has a very antient church, an independent chapel, and two endowed schools. Parish population in 1831, 737. A small weekly market on Saturday. Near it are the ruins of Barnscar, supposed by some to have been a British and by others a Danish city.

Derwent division consists of a portion of the county taken from the wards of Allerdale above and below Derwent, by an order of the magistrates made at the quarter-sessions of 1833. It contains most of the lakes, the borough of Cockermouth, for which see article COCKERMOUTH, and the market-towns of Maryport and Keswick.

Maryport is a neat modern seaport on the river Ellen. In 1750 there was only one house on the present site of the town. The trade and manufacture connected with ship-building are flourishing. A very handsome market-house has been lately erected, and a new harbour is now building. The vessels belonging to the port are about 130 in number, and are chiefly employed in exporting coal, lime, and stone, and in importing cattle, timber, flax, and iron. A steamer sails weekly to Liverpool in the winter, and also to the Isle of Man and Dublin in the summer season. In the town are a chapel of ease, five dissenting places of worship, a national school, and a school of industry. Chapelry population in 1831, 3877. Market-day, Friday. In the vicinity are the mansions of Nether-hall and Unerigg, and the village of Ellenborough, from which the late Lord Chief Justice Law derived his title. At a short distance are Tallantire-hall and Dovenby-hall.

Keswick is a small and pleasant town, standing on the banks of the Greta, near the lake of Derwent-water. It is much resorted to by visiters to the lakes, and is celebrated for the beautiful and romantic scenery in its vicinity. The parish church of Crosthwaite is about half a mile from Keswick. John Marshall, Esq. is now erecting a new church on the opposite side of the town. Char is potted here, and sent to London, and to almost every part of the kingdom. This place is also noted for black-lead pencils. Woollen goods, fancy waistcoatings, and edge-tools are manufactured here. The Town-hall is a small edifice. There are two good museums; a national school, and a Sunday-school; a free-school, and workhouse. Township population in 1831, 2159. There is a weekly market on Saturday. Sir John Banks, chief justice of the Common Pleas, was born at Keswick; and on his death, in 1642, bequeathed property worth upwards of 200*l*. per annum to the poor of his native town. Robert Southey, the present poet-laureat, resides at Greta-hall near Keswick.

Allerdale below Derwent comprises a part of the west of the county, and contains four very small market-towns, Allonby, Abbey Holme, Ireby, and Hesket-New-market.

Allonby is pleasantly situated on the sea-shore, and is much frequented for bathing. It has a chapel of ease; a school with a small endowment, and a Friends' meeting-house. A good building, containing warm and cold baths, has been lately erected. The inhabitants are chiefly engaged in fishing. Chapelry population in 1831, 783. Market-day, Saturday. Captain Huddart, who constructed the much esteemed nautical charts, was a native of Allonby, where he worked some time as a mechanic and also as a fisherman, and gradually advanced to be captain in the East India service, and elder brother of the Trinity-house, London. Hayton-castle and Brayton-house are situated a short distance from Allonby.

Abbey-Holme, about six miles from Wigton, has a small market on Saturday, in summer only. Quarter population in 1831, 861; parish population 3056. In this parish was an abbey of Cistercians, said to have been founded about the year 1150, by Prince Henry, son of David, king of Scotland; part of the ruins is remaining, and has been converted into the parish church. In the reigns of Edward I. and Edward II. the abbots of this religious house were summoned to several parliaments. Woolsty-castle, of which there is now scarcely a vestige, was a strong fortress. Near it is the famous Green-Row academy.

Ireby is a very old town, having had a market granted to it 600 years ago, but so little benefit has it derived from the grant, that in 1831 the entire parish contained only 49 inhabitants. The church is small. The salary of the present clergyman, who has filled the office above half a century, was only 25*l*. a year until recently augmented by Queen Anne's Bounty. The school has a small endowment. Clea-hall, Whitefield-house, and Snittlegarth, are in this neighbourhood.

Hesket-New-market is a small but neat town, situate on the banks of the Caldew, 9 miles south of Wigton and 13 south-west of Carlisle. It has a weekly market on Friday.

Leath Ward comprises the south and south-east parts of the county, and has within its limits an inexhaustible store of mineral treasures. It contains three market-towns, Penrith, Kirkoswald, and Alston.

Penrith is an antient and well-built town, 283 miles from London, situate in a fine fertile vale at the south extremity of Inglewood forest. It has no manufactories of consequence. The church is a neat and elegant structure· on one of its walls is the following inscription: 'A. D. 1598 ex gravi peste quæ regionibus hisce incubuit obierunt apud Penrith 2260, Kendal 2500, Richmond 2200, Carlisle 1196. Posteri, avertite vos et vivite.' In the church-yard is an antient monument, consisting of two pyramidal stones twelve feet high, called the Giant's Grave. Here are six dissenting chapels; a free grammar-school; several charity-schools, and a house of correction. Penrith was several times pillaged and twice burned by the Scots in the turbulent times that preceded the union. On an eminence to the west are the ruins of a castle which was inhabited by Richard III. when duke of Gloucester, and was destroyed in the time of the Commonwealth. The Beacon stands on a high mount, about a mile from the town, and commands a view of the country for more than 100 miles in circumference. Parish population in 1831, 6059. Market-day, Tuesday. Sir Richard Hutton, judge of the Common Pleas, was a native of Penrith. In its vicinity in this county are the following mansions: Eden-hall, Carlton-hall, Hutton-hall, Skirsgill, Dalemain, and Hallsteads. Greystoke-castle and Dacre-castle are each about six miles distant. The former was the antient seat of the duke of Norfolk; the latter is supposed to have been the original mansion of the Dacre family, and is now converted into a farm-house.

Kirkoswald is situated in a beautiful vale on the Eden, fifteen miles from Carlisle. The church was dedicated to St. Oswald, the celebrated martyr and king of Northumberland; and in the reign of King John belonged to Hugh de Morville, one of the murderers of Thomas à Becket. Near the town are the remains of an antient castle, and a mansion called the College. A paper-mill and a mill for carding and spinning wool are the only manufactories. Township population in 1831, 768. A weekly market on Thursday, and great markets on Thursday before Whitsuntide, and August 1st. Caleb Threlkeld, a famous botanist, was born here in 1675. John Aglionby, a learned divine, who had a considerable hand in the present translation of the New Testament, and Dr. Leake, the founder of the Westminster Lying-in Hospital, were natives of the adjoining parish of Ainstable. A peculiar wind, called the *Helm-wind*, sometimes blows with great fury in this part of the country. It is believed by some persons to be an electrical phenomenon.

Alston is situate in a wild and mountainous district, on the confines of Northumberland, near the Tyne, and has valuable lead-mines in its vicinity; a good modern church, four chapels for dissenters, a national school, grammar-school, and subscription library. Parish population in 1831, 5244. Market-day, Saturday. The lead-mines are let to the London Lead Company and several other persons, who pay one-fifth part of the ore raised for rent. On an average, the mines produce 7600 tons of lead annually, and from every ton about thirteen ounces of silver are extracted. Copper is also worked in several of the mines.

Cumberland Ward is situate in the north-west. It is the most fertile and most central ward, and contains the city of Carlisle (an account of which may be found under the article CARLISLE), and the market-town of

Wigton, which is a well-built town, seated near the Wiza, in a beautiful part of the county. It was burned by the Scots in the fourteenth century, when they plundered the monastery of Holm Cultram. The principal manufactures are checks, ginghams, and calicoes. Here are gas-works, extensive print-works, and a dyeing establishment. In 1725 an hospital was founded here for six indigent widows of episcopal clergymen. In 1788 a handsome new church was built. The Quakers, Independents, and Methodists have neat and commodious chapels. A Catholic chapel is now building. There are also an endowed grammar-school, a news-room, and a parochial library. Township population in 1831, 4885. The market is held on Tuesday; a great market on St. Thomas's Day. The Rev. John Brown, a distinguished writer, author of 'Barbarossa,' &c., was educated at Wigton. About one mile south of Wigton are the remains of a Roman station, called Old Carlisle. At Brookfield, one mile to the west, is a large Quakers' academy.

Eskdale Ward is the most northern division; being situate on the borders of Scotland, the remains of numerous towers, castles, forts, and encampments are scattered over it. This ward contains only two market-towns, Brampton and Longtown.

Brampton is a very antient town, and has a weekly market on Wednesday. The new chapel was consecrated in 1789, and greatly enlarged and improved in 1827. A new town-hall, of an octagonal form, and a national school, were erected by the earl of Carlisle in 1817. Gas-works are now being established. Here are four dissenting chapels, three Sunday schools, a grammar-school, and an infant school. The old church, a part only of which is remaining, is situated a mile and a half from the town, on an eminence near the village of Irthington. The principal manufactures are the weaving of checks and ginghams for the Carlisle manufacturers, some of whom have large establishments at Warwick-bridge, Carlisle, and Dalston. Township population in 1831, 2842. The Mote is a natural mount at the east end of the town, probably an antient fort. It rises 360 feet above the level of the streets, and commands an extensive prospect. Upon a rock on the banks of the Gelt, one mile and a half to the south, a Roman inscription is still legible. About two miles to the east are Lanercost-abbey and Naworth-castle. The former was founded in 1116, and exhibits some beautiful ruins: the latter was a strong fortress, and the baronial mansion of the lords of Gilsland; it is now the property and occasional residence of the earl of Carlisle. The seats in the neighbourhood are Walton-house, Edmond-castle, and Stone-house. Gilsland Spa is a much frequented watering-place on the banks of the Irthing, about nine miles distant. The parish of Brampton gave birth to Dr. Guy Carlton, bishop of Bristol and afterwards of Chichester, and to James Wallace, Esq., attorney-general, father of the present Lord Wallace.

Longtown is a modern town on the borders of Scotland, in the parish of Arthuret, which parish in 1831 contained 2053 inhabitants. The streets are regular and spacious. Thursday is the market-day. Cranberries in the season are brought to this market in great quantities from the moors of Scotland. On Monday a market is held for bacon and butter, in which articles there is an extensive trade. Arthuret church, a very elegant Gothic structure, about half a mile distant, was built in 1609. In the town are a Presbyterian meeting-house and two charity-schools. Netherby is pleasantly situated on the banks of the Esk, about two miles from Longtown. Liddel Strength, the site of an antient castle, is about four miles distant.

Divisions for ecclesiastical and legal purposes.—The whole of the county is in the diocese of Carlisle, with the exception of the ward of Allerdale-above-Derwent, in the diocese of Chester, and the parish of Alston, in that of Durham. The gross yearly value of the see may be estimated, upon an average of seven years, at 3000*l.* The commissioners appointed to consider the state of the dioceses in England and Wales recommend that the sees of Carlisle and Sodor and Man be united; and that the diocese consist of the present diocese of Carlisle, of those parts of Cumberland and Westmoreland which are now in the diocese of Chester, of the deanery of Furness and Cartmel, in the county of Lancaster, of the parish of Alston, and of the Isle of Man. An act for carrying into effect the reports of the commissioners was passed in the session of parliament, 1836.

There are 3 deaneries, Carlisle, Penrith, and Wigton; 1 archdeaconry; 104 parishes; 400 townships; 41 rectories; 28 vicarages; 59 perpetual curacies and chapelries; and 7 small extraparochial places and hamlets. The Roman Catholics have 6 chapels; the Independents upwards of 20; the Church of Scotland 7, and the Secession 7; the Quakers about 20; the Antipædobaptists 6; and the Methodists, comprising the Wesleyans, primitive and reform, upwards of 70. The corporation of the dean and chapter of Carlisle consists of the dean, 4 prebendaries, and 6 minor canons. The surplus revenue, after the yearly payments and temporary charges, amounts, on an average of seven years, to 3510*l.*, which sum is divided into six equal parts, two of which go to the dean, and the remainder equally among the four prebendaries. Houses are also assigned for their residences, which they respectively occupy, and are bound to keep in repair.

Cumberland is comprehended in the province of York, and in the northern circuit. The assizes are held at Carlisle twice a year. The quarter-sessions are held twice at Carlisle and twice at Cockermouth annually; the Easter and Michaelmas sessions at the latter place, and the Midsummer and Christmas at the former, each commencing on Tuesday. The county returns four members to parliament (two having been added by the Reform Act); two for the eastern division, which includes Cumberland, Leath, and Eskdale Wards, and two for the western division, comprising the wards of Allerdale-above-Derwent, Derwent, and Allerdale-below-Derwent. Carlisle sends two members, the borough of Cockermouth two, and Whitehaven one (the last also given by the Reform Act). The members for Carlisle and the eastern division are elected at Carlisle; the members for Cockermouth and the western division at Cockermouth; and the member for Whitehaven at Whitehaven. The polling-stations for the eastern division are Carlisle, Brampton, Wigton, Penrith, and Alston. The number of voters by the registration of 1836 was 4638. The polling-stations for the western division are Cockermouth, Aspatria, Keswick, Bootle, and Egremont: the number of voters registered in 1836 was 4437. The number for the borough of Carlisle in 1836—freemen, 328, householders, 684: total, 1012.

History and Antiquities.—The earliest inhabitants of Cumberland of whom we have any account, were the Brigantes, a bold and warlike people, conquered by the Romans about A. D. 121, when the famous Roman or Picts' Wall was erected by Hadrian, to prevent the ravages of the Caledonians, who bore an inveterate hatred to the Romans. This barrier was formed of earth, and connected a chain of forts erected by Agricola in 78. being found insufficient, Severus, in 210, built one of stone, 73 miles in length, from near the mouth of the Tyne to the Solway Frith. The last was strengthened by an outward ditch, and guarded by towers and a chain of forts and stations. Remains of both walls, but particularly of that of Severus, may still be traced in several places. At a very early period, the inhabitants, who were the true and genuine Britons, were called Cumbri: and hence probably the name of the district, Cumberland. In almost every part of the county are remains of British and Roman antiquities. About three miles from Kirkoswald is a Druidical temple, consisting of a circle of sixty-seven unhewn stones, called Long Meg and her Daughters. Another and more entire circle of stones is situated a mile and a half south-east of Keswick. This county has been a perfect magazine of Roman antiquities. The remains of Roman garrisons or stations are still distinctly observable at Maryport, Old Carlisle, Old Penrith, and Bewcastle. Several altars, inscriptions, coins, instruments, utensils, &c. have been discovered at these places. After the retreat of the Romans, the country was laid waste and the city of Carlisle reduced to a complete state of ruin by the Scots and Picts. The country had also to endure the ravages of the Danes. During the Saxon Heptarchy it was joined to the kingdom of Northumberland, but was governed by its own chieftain under what was called the Danish law, until the Norman Conquest. In 945 Cumberland was granted to Malcolm, king of Scotland, and was for a long time the scene of war and bloodshed between the two crowns, being sometimes under the dominion of the kings of England and sometimes under that of the kings of Scotland. At the time of the Conquest, the county was in such a state of poverty and desolation, that it was not rated in the Domesday Book, William the Conqueror having remitted all its taxes. Walter, one of his countrymen, laid the foundation of a priory at Carlisle, which was afterwards converted into an episcopal see. In 1237 Cumberland was finally annexed to the crown of England by Henry III. at a conference held at York; but the feuds between the two kingdoms continued for more than three centuries afterwards, and this county, situate on the borders, and containing the *debatable land*, was often the scene of contention, rapine, and bloodshed. In 1307 Edward I. died, on an expedition towards Scotland, at Burgh Marsh, near Carlisle, where a monument has been erected to his memory. The inhabitants of the county at various times suffered many cruelties and deprivations, had several towns burnt and monasteries destroyed, and were not relieved from hostile attacks and inroads until the union of the two crowns by the succession of James I. Even after this time, outrages and robberies were frequently committed. During the civil war between king Charles and his parliament, and also during the time of Cromwell, Carlisle was besieged, and the inhabitants were much harassed and distressed. This county was the scene of hostilities in the rebellions of 1715 and 1745. In the latter, Carlisle was taken possession of by Charles Stuart and his followers, and was retaken by the king's forces under the duke of Cumberland.

There were formerly several monasteries and antient hospitals in Cumberland. The Austin monks had a priory at Lanercost and another at Carlisle. The Benedictines had priories at Wetheral, Nunnery, St. Bees, and Seaton. The Cistercians had an abbey at Holm Cultram and another at Calder. There was a convent of grey friars at Penrith; one of black friars and another of grey friars at Carlisle. There were religious houses of antient foundation at Carlisle, St. Bees, and Dacre. A nunnery is said to have been founded at Carlisle by David, king of Scotland, at which place there was an hospital for thirteen lepers, dedicated to St. Nicholas. At Wigton, an hospital and free chapel were dedicated to St. Leonard. Many of the old churches exhibit remains of the Saxon and early Gothic architecture. Specimens of the former may be seen in the churches of Aspatria, Torpenhow, and Kirklinton; and of the latter in the abbeys of Lanercost and Holm Cultram. The west end of the last-mentioned abbey is the only specimen of the latest Gothic in the county. The churches of Burgh-on-Sands, Newton Arlosh, and Great Salkeld have strongly-fortified towers, which probably served as places of refuge for the inhabitants of these villages in the time of an invasion.

(Nicholson and Burn's *History and Antiquities of Cumberland*; Hutchinson's *History of Cumberland*; Conybeare and Phillips's *Geology of England and Wales*; Otley's *Guide to the Lakes*; Scott's *Do.*; Lysons' *Beauties of England and Wales*; Bailey and Culley's *Survey of the Agriculture of Cumberland*; Housman's *Topographical Description of Cumberland, &c.*; Ridpath's *Border History of England and Scotland*; *Communications from Cumberland.*)

STATISTICS.—*Population.* Cumberland is both an agricultural and manufacturing county. It is the twenty-eighth on the list of agricultural counties. The population, in 1831, included 40,614 male inhabitants of twenty years of age and upwards. Of this number, 15,466 were engaged in agricultural pursuits, and 3214 in manufactures or in making manufacturing machinery. The latter were thus distributed: the manufacture of cotton employed 2200; calico and ginghams, 300; woollens, 174; sail-cloth, linen, and linen thread, about 100; pottery, 5; and about 250 in the manufacture of cordage, sail-cloth, twine, worsted, and tobacco, most of them at Whitehaven.

The following summary of the population taken at the last census (1831), shows the number of inhabitants and their occupations in each ward, &c. of the county.

WARDS*, &c.	HOUSES.				OCCUPATIONS.			PERSONS.			Males twenty years of age.
	Inhabited.	Families.	Building.	Uninhabited.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	All other families not comprised in the two preceding classes.	Males.	Females.	Total of persons.	
Allerdale — above Derwent . .	7,967	8,261	41	478	2,444	2,360	3,457	18,950	20,968	39,918	9,053
Allerdale — below Derwent . .	5,031	5,354	24	229	2,040	1,469	1,845	12,837	13,559	26,396	6,368
Cumberland . .	3,848	4,140	40	184	1,701	1,699	740	10,159	10,445	20,604	5,225
Eskdale . . .	4,161	4,593	22	120	2,223	1,428	942	11,987	12,004	23,991	6,005
Leath	5,094	5,443	24	286	1,973	1,396	2,074	13,830	13,543	27,373	6,937
Carlisle (city) . .	2,696	4,326	50	116	249	2,886	1,191	9,450	10,556	20,006	4,890
Whitehaven (town)	2,220	2,703	12	99	..	788	1,915	4,758	6,635	11,393	2,136
Totals . . .	31,017	34,820	213	1512	10,630	12,026	12,164	81,971	87,710	169,681	40,614

The population of Cumberland at each of the four enumerations was:—

	Males.	Females.	Total.	Inc. per Cent.
1801	54,377	62,853	117,230	..
1811	63,433	70,311	133,744	14
1821	75,600	80,524	156,124	17
1831	81,971	87,710	169,681	10

Showing an increase between the first and last periods of 52,451 persons, or nearly 44¾ per cent., being 12¼ per cent. below the general rate of increase throughout England.

County Expenses, Crime, &c.—The sums expended for the relief of the poor at the four dates of—

1801 were	£27,603,	which was 4*s.* 8*d.*	for each inhabitant.
1811 ,,	44,985	,, ,, 6*s.* 8*d.*	
1821 ,,	52,352	,, ,, 6*s.* 8*d.*	
1831 ,,	46,167	,, ,, 5*s.* 5*d.*	

The sum expended for the same purpose in the year ending 25th March, 1836, was 34,883*l.* 7*s.*; and assuming that the population has increased at the same rate of per-centage since 1831 as in the ten years preceding that period, the above sum gives an average of 3*s.* 11*d.* for each inhabitant. All these averages are below those for the whole of England and Wales.

The sum raised in Cumberland for poor's-rate, county-rate, and other local purposes, in the year ending 25th March, 1833, was levied upon various descriptions of property, as follows:—

	£.	*s.*	*d.*
On land . . .	43,405	14	0
,, dwelling-houses . .	12,080	6	0
,, mills, factories, &c. . .	1,182	10	0
,, manorial profits, navigation, &c.	1,575	14	0
Total money levied by assessment .	58,244	4	0

The amount expended was:—

For the relief of the poor .	46,901	15	0
In suits of law, removal of paupers, &c.	2,197	4	0
For other purposes . .	9,585	10	0
Total money expended .	£58,684	9	0

In the returns made up for the three succeeding years, the descriptions of property assessed for local purposes are not distinguished.

	1834.	1835.	1836.
The total money levied, was	£57,919 13 0	54,396 15 0	46,811 1 0
Expended for relief of poor .	43,067 2 0	38,966 8 0	34,883 7 0
,, in suits of law, removal, &c. . . .	2,315 13 0	1,857 8 0	1,655 6 0
Payments for or towards county rates . . .	.. ..	8,651 16 0	5,935 8 0
Expended for all other purposes	11,894 1 0	5,130 6 0	4,507 14 0
Total parochial rates expended	57,276 16 0	54,605 18 0	46,981 16 0

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* A new division has been made since the census was taken, which is mentioned in the previous part of this article.

The saving effected in the sums expended for the relief of the poor in 1836, as compared with the expenditure of 1835, is therefore rather less than 10¼ per cent. The amount of the other items is however still less in proportion than that of the preceding year, reducing the whole amount of saving to nearly 14 per cent.

From a parliamentary report on the subject, made in 1836, it is found that the number of turnpike trusts in Cumberland is 14; the number of miles of road under their charge is 215; the annual income arising from the tolls and parish composition, in 1834, was 17,365*l.* 15*s.* 2*d.*; and the annual expenditure, 17,655*l.* 11*s.* 11*d.*

The amount of expenditure of county-rate in the year 1834 was 11,161*l.* 15*s.* 8½*d.*—thus disbursed:

	£.	*s.*	*d.*
Bridges, building, repairs, &c. .	6,437	7	10
Gaols, houses of correction, &c., and maintaining prisoners, &c. .	1,552	19	3
Shire halls and courts of justice—building, repairing, &c. . .	44	9	7
Prosecutions . . .	1,078	13	8
Clerk of the peace . . .	448	11	11
Conveyance of prisoners before trial .	123	4	3
,, of transports . .	132	12	0
Vagrants—apprehending and conveying	147	12	7
Constables—high and special .	200	0	0
Coroner	278	8	3
Miscellaneous . . .	717	16	4½

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were respectively 351, 408, and 477; making an annual average of 50 in the first period; of 58 in the second, and of 68 in the third period.

The number of persons tried at quarter-sessions in respect of which any costs were paid out of the county rates in each of the years 1831, 1832, and 1833, were 33, 38, and 50, respectively:

	1831.	1832.	1833.
Total number of felonies so tried	25	33	42
,, misdemeanors	8	5	8

The total number of commitments to the quarter-sessions in each of the same years was 38, 43, and 42, respectively: of whom

	1831.	1832.	1833.
The number convicted was .	29	33	34
,, acquitted . .	5	8	6
Discharged by proclamation .	4	2	2

At the assizes and sessions in 1835, 100 persons were charged with crimes in Cumberland; out of which number 17 were charged with offences against the person, 10 of which were common assaults; only 1 was committed for housebreaking; 66 for offences against property committed without violence; and of the remaining 16 one was committed for forgery, 1 for uttering counterfeit coin, 4 for perjury, and 10 for riot, &c. Of those committed 86 were convicted, and 14 acquitted, or no bill found. The 86 who were convicted, were punished as follow:—1 was executed, 2 transported for life, 1 for 14 years, and 15 for 7 years; 4 imprisoned for 2 years or upwards of 1 year, 21 for 1 year, or more than 6 months, and 40 for 6 months or under; 2 were discharged on sureties. Of the offenders 79 were males and 21 females. Among the whole number 50 could read and write, 22 could read only, 24 could neither read nor write; and of the remaining 4 the degree of instruction could not be ascertained. The proportion of the offenders to the population in 1835 was 1 in 1697.

The number of persons qualified to vote for the county members of Cumberland were, in

	1834.	1835.	1836.
The eastern division . .	3992	4623	4638
The western division . .	4149	4406	4437
	8141	9029	9075

which is 1 in 14 of the whole population, and 1 in 4 of the male population above 20 years of age. The expenses of the last election to the inhabitants of the county were 361*l.* 2*s.* 2*d.*, and were paid out of the general county rate.

There are six savings-banks in this county. The number of depositors and amount of deposits on the 20th of November were in the respective years:—

	1832.	1833.	1834.	1835.
Number of depositors	3979	4215	4543	4898
Amount of deposits	£125,537	133,827	140,399	149,414

The various sums placed in the savings-banks in 1834 and 1835, were distributed as under:—

		1834.		1835.	
		Depositors.	Deposits.	Depositors.	Deposits.
Not exceeding	£20	2307	£19,293	2402	£19,501
,,	50	1403	42,730	1568	47,157
,,	100	553	38,401	641	41,739
,,	150	176	20,763	175	20,614
,,	200	85	14,563	93	15,903
Above	200	19	4,649	19	4,500

Education.—The following particulars are obtained from the parliamentary papers on the subject, delivered after the sessions of 1835:—

	Schools.	Scholars.	Total.
Infant Schools	11		
Number of infants at such schools; ages from 2 to 7 years:—			
Males . . .		377	
Females . .		486	
Sex not specified		—	
			863
Daily Schools	632		
Number of children at such school, ages from 4 to 14 years:—			
Males		9688	
Females . . .		7149	
Sex not specified		3831	
			20,668
Schools . . .	643		
Total of children under daily instruction .			21,531
Sunday Schools	185		
Number of children at such schools, ages from 4 to 15 years:—			
Males		6100	
Females . . .		5553	
Sex not specified		3039	
			14,692

Assuming that the population between 2 and 15 years increased in the same ratio as the whole of the population between 1821 and 1831, and that it has continued to increase in the same ratio since, we find that there must have been living in Cumberland in 1834 (the time this education inquiry was made) 54,860 persons between those ages. Of these a large number attend both daily and Sunday schools. Only four Sunday schools are returned from places where there are no other schools, and where the children, 258 in number, who are instructed therein, cannot be supposed to attend at any other school; at all other places Sunday-school children have the power of resorting to other schools also; but in what number or in what proportion duplicate entry of the same children is thus produced, must remain uncertain. Twenty schools, containing 1380 children, which are both daily and Sunday schools, are returned from various places, and duplicate entry is therefore known to be thus far created. After making deductions for this, we may conclude that much below two-thirds of the children receive instruction.

Maintenance of Schools.

Description of Schools.	By endowment.		By subscription.		By payments from scholars.		Subscrip. and payment from scholars.	
	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.
Infant Schools	—	—	2	115	4	80	5	668
Daily Schools	94	2050	14	1,297	501	15,077	23	2244
Sunday Schools	4	306	171	13,654	1	30	9	702
Total.....	98	2356	187	15,066	506	15,187	37	3614

The schools established by dissenters, included in the above statement, are:—

	Schools.	Scholars.
Infant Schools	—	—
Daily ,, ...	3	225
Sunday ,, ...	44	5197

The schools established since 1818 are:—

Infant and other daily Schools	308	8,910
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Seven boarding schools are included in the number of daily schools as given above.

No school in this county appears to be confined to the children of the parents of the Established Church, or of any other religious denomination; such exclusion being

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CUMBERLAND, RICHARD, was born in the parish of St. Ann, near Aldersgate, in London, on the 13th of July, 1632. He received the early part of his education at St. Paul's school, and went thence to Magdalen College, Cambridge, in 1649. After taking his master's degree he thought of entering the medical profession, and accordingly studied medicine for a short time; but he soon relinquished this intention, and took orders. In 1658 he was appointed to the rectory of Brampton, in Northamptonshire, where he remained till 1667, when Sir Orlando Bridgman, who had been his contemporary at Cambridge, and had now become lord keeper, first made him his chaplain, and shortly after bestowed on him the living of Allhallows, in Stamford. In both places he performed the duties of minister with the most exemplary assiduity. In Stamford he regularly preached three times every Sunday, having taken upon himself a weekly lectureship in addition to his parochial duties. His 'Inquiry into the Laws of Nature,' which was written while he was chaplain to Sir Orlando Bridgman, appeared in 1672, the year in which Puffendorf published his 'Treatise on the Law of Nature and Nations.' His 'Essay on Jewish Weights and Measures,' a work of great learning and acuteness, was published in 1686.

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Dr. Cumberland's private character appears to have been a perfect model of virtue. 'When I read,' says Mr. Payne, 'the character given in Scripture of Moses, that "he was very meek above all the men that were upon the face of the earth," and that given to Nathaniel by our Saviour, that "he was an Israelite indeed, in whom was no guile;" I cannot but apply them to this extraordinary person, for I think there never could be a man after them whom these characters do more truly fit.' He was a man also of most extensive learning. 'He was thoroughly acquainted with all the branches of philosophy: he had good judgment in physic, knew everything that was curious in anatomy, had an intimacy with the classics. Indeed he was a stranger to no part of learning, but every subject he had occasion to talk of, he was as much a master of it as if the direction of his studies had chiefly lain that way. He was thoroughly conversant in scripture, and had laid up that treasure in his mind. No hard passage ever occurred, either occasionally or in reading, but he could readily give the meaning of it, and the several interpretations, without needing to consult his books.'

The Inquiry into the Laws of Nature* was called forth by the political and moral works of Hobbes. Hobbes is charged therein with atheism; he is represented, as he is also represented in Cudworth's 'Eternal and Immutable Morality,' as denying any standard of moral good and evil other than one fashioned by human law; he is upbraided for the forms of expression that in a state of nature all men have a right to all things, and that the state of nature is a state of war. These differences between Hobbes and Cumberland may be all traced to a misapprehension of the former's meaning. As regards Cumberland's own views of moral science, they are substantially correct. Objections may be made to the phrases, 'law of nature' and 'right reason,' by which last he denotes the set of faculties employed in the determination of moral good and evil. But though in a science where the chief disputes that have arisen are verbal disputes, phraseology cannot be accounted unimportant, and though that phraseology, combined with clumsiness of style and arrangement, has prevented a general perception of the substantial merits of the work, we must, while we regret the defect and its consequences, do justice to a really correct system. Tendency to affect the general good is made the standard of morality. To endeavour to effect the greatest amount of general good, is the one great duty, or the one great 'law of nature;' and we know, according to Cumberland, that it is a duty or law of nature, or law of God, because we know that an individual derives the greatest happiness from the exercise of benevolence, and that God desires the greatest possible happiness of all his creatures. Carrying out the fundamental principle, that the greatest general good is to be sought, he deduces the several particular duties or particular 'laws of nature.' He founds government upon, and tests it by, the same principle.

Sir James Mackintosh, after passing one or two other criticisms on Cumberland's system, observes: 'He had a momentary glimpse of the possibility, that some human actions might be performed with a view to the happiness of others, without any consideration of the pleasure reflected back on ourselves. But it is too faint and transient to be worthy of observation, otherwise than as a new proof how often great truths must flit before the understanding before they can be firmly and finally held in its grasp.' The pretty sentiment of the second sentence is doubtless the secret of a criticism, which, passed upon a system that makes the general good the end, and spoken of the good accruing to one's self from the pursuit of the general good only as an index to the will of God, is, at best, unmeaning. Sir James afterwards says: 'Throughout his whole reasoning, he adheres to the accustomed confusion of the quality which renders actions virtuous with the sentiments excited in us by the contemplation of them.' 'The quality which renders actions virtuous' is, according to Cumberland, their tendency to increase the general good. 'The sentiments excited in us by the contemplation of them' are, the sentiments of moral approbation and disapprobation. Does Cumberland confound these sentiments with a tendency to increase general good? Can this, which Sir James Mackintosh calls an 'accustomed confusion,' ever have taken place? (*Dissertation on Ethical Philosophy*, sec. v.)

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The saving effected in the sums expended for the relief of the poor in 1836, as compared with the expenditure of 1835, is therefore rather less than 10½ per cent. The amount of the other items is however still less in proportion than that of the preceding year, reducing the whole amount of saving to nearly 14 per cent.

From a parliamentary report on the subject, made in 1836, it is found that the number of turnpike trusts in Cumberland is 14; the number of miles of road under their charge is 215; the annual income arising from the tolls and parish composition, in 1834, was 17,365*l.* 15*s.* 2*d.*; and the annual expenditure, 17,655*l.* 11*s.* 11*d.*

The amount of expenditure of county-rate in the year 1834 was 11,161*l.* 15*s.* 8½*d.*—thus disbursed:

	£.	*s.*	*d.*
Bridges, building, repairs, &c. .	6,437	7	10
Gaols, houses of correction, &c., and maintaining prisoners, &c. .	1,552	19	3
Shire halls and courts of justice—building, repairing, &c. . .	44	9	7
Prosecutions . . .	1,078	13	8
Clerk of the peace . . .	448	11	11
Conveyance of prisoners before trial .	123	4	3
,, of transports . .	132	12	0
Vagrants—apprehending and conveying	147	12	7
Constables—high and special .	200	0	0
Coroner	278	8	3
Miscellaneous . . .	717	16	4½

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were respectively 351, 408, and 477; making an annual average of 50 in the first period; of 58 in the second, and of 68 in the third period.

The number of persons tried at quarter-sessions in respect of which any costs were paid out of the county rates in each of the years 1831, 1832, and 1833, were 33, 38, and 50, respectively:

	1831.	1832.	1833.
Total number of felonies so tried	25	33	42
„ misdemeanors	8	5	8

The total number of commitments to the quarter-sessions in each of the same years was 38, 43, and 42, respectively: of whom

	1831.	1832.	1833.
The number convicted was .	29	33	34
„ acquitted . .	5	8	6
Discharged by proclamation .	4	2	2

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Number of infants at such schools; ages from 2 to 7 years:—			
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Sex not specified		—	
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Number of children at such school, ages from 4 to 14 years:—			
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	Schools.	Scholars.
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Miscellaneous . . .	717	16	4½

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were respectively 351, 408, and 477; making an annual average of 50 in the first period; of 58 in the second, and of 68 in the third period.

The number of persons tried at quarter-sessions in respect of which any costs were paid out of the county rates in each of the years 1831, 1832, and 1833, were 33, 38, and 50, respectively:

	1831.	1832.	1833.
Total number of felonies so tried	25	33	42
,, misdemeanors	8	5	8

The total number of commitments to the quarter-sessions in each of the same years was 38, 43, and 42, respectively: of whom

	1831.	1832.	1833.
The number convicted was .	29	33	34
,, acquitted . .	5	8	6
Discharged by proclamation .	4	2	2

At the assizes and sessions in 1835, 100 persons were charged with crimes in Cumberland; out of which number 17 were charged with offences against the person, 10 of which were common assaults; only 1 was committed for housebreaking; 66 for offences against property committed without violence; and of the remaining 16 one was committed for forgery, 1 for uttering counterfeit coin, 4 for perjury, and 10 for riot, &c. Of those committed 86 were convicted, and 14 acquitted, or no bill found. The 86 who were convicted, were punished as follow:—1 was executed, 2 transported for life, 1 for 14 years, and 15 for 7 years; 4 imprisoned for 2 years or upwards of 1 year, 21 for 1 year, or more than 6 months, and 40 for 6 months or under; 2 were discharged on sureties. Of the offenders 79 were males and 21 females. Among the whole number 50 could read and write, 22 could read only, 24 could neither read nor write; and of the remaining 4 the degree of instruction could not be ascertained. The proportion of the offenders to the population in 1835 was 1 in 1697.

The number of persons qualified to vote for the county members of Cumberland were, in

	1834.	1835.	1836.
The eastern division . .	3992	4623	4638
The western division . .	4149	4406	4437
	8141	9029	9075

which is 1 in 14 of the whole population, and 1 in 4 of the male population above 20 years of age. The expenses of the last election to the inhabitants of the county were 361*l.* 2*s.* 2*d.*, and were paid out of the general county rate.

There are six savings-banks in this county. The number of depositors and amount of deposits on the 20th of November were in the respective years:—

	1832.	1833.	1834.	1835.
Number of depositors	3979	4215	4543	4898
Amount of deposits	£125,537	133,827	140,399	149,414

The various sums placed in the savings-banks in 1834 and 1835, were distributed as under:—

		1834.		1835.	
		Depositors.	Deposits.	Depositors.	Deposits.
Not exceeding	£20	2307	£19,293	2402	£19,501
,,	50	1403	42,730	1568	47,157
,,	100	553	38,401	641	41,739
,,	150	176	20,763	175	20,614
,,	200	85	14,563	93	15,903
Above	200	19	4,649	19	4,500

Education.—The following particulars are obtained from the parliamentary papers on the subject, delivered after the sessions of 1835:—

	Schools.	Scholars.	Total.
Infant Schools	11		
Number of infants at such schools; ages from 2 to 7 years:—			
Males . . .		377	
Females . .		486	
Sex not specified		—	863
Daily Schools	632		
Number of children at such school, ages from 4 to 14 years:—			
Males		9688	
Females . . .		7149	
Sex not specified		3831	20,668
Schools . . .	643		
Total of children under daily instruction .			21,531
Sunday Schools	185		
Number of children at such schools, ages from 4 to 15 years:—			
Males		6100	
Females . . .		5553	
Sex not specified		3039	14,692

Assuming that the population between 2 and 15 years increased in the same ratio as the whole of the population between 1821 and 1831, and that it has continued to increase in the same ratio since, we find that there must have been living in Cumberland in 1834 (the time this education inquiry was made) 54,860 persons between those ages. Of these a large number attend both daily and Sunday schools. Only four Sunday schools are returned from places where there are no other schools, and where the children, 258 in number, who are instructed therein, cannot be supposed to attend at any other school; at all other places Sunday-school children have the power of resorting to other schools also; but in what number or in what proportion duplicate entry of the same children is thus produced, must remain uncertain. Twenty schools, containing 1380 children, which are both daily and Sunday schools, are returned from various places, and duplicate entry is therefore known to be thus far created. After making deductions for this, we may conclude that much below two-thirds of the children receive instruction.

Maintenance of Schools.

Description of Schools.	By endowment.		By subscription.		By payments from scholars.		Subscrip. and payment from scholars.	
	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.
Infant Schools	—	—	2	115	4	80	5	668
Daily Schools	94	2050	14	1,297	501	15,077	23	2244
Sunday Schools	4	306	171	13,654	1	30	9	702
Total.....	98	2356	187	15,066	506	15,187	37	3614

The schools established by dissenters, included in the above statement, are:—

	Schools.	Scholars.
Infant Schools	—	—
Daily ,, ...	3	225
Sunday ,, ...	44	5197

The schools established since 1818 are:—

Infant and other daily Schools	308	8,910
Sunday Schools	143	10,114

Seven boarding schools are included in the number of daily schools as given above.

No school in this county appears to be confined to the children of the parents of the Established Church, or of any other religious denomination; such exclusion being

disclaimed in almost every instance, especially in schools established by dissenters, with whom are here included Wesleyan Methodists, together with schools for the children of Roman Catholic parents.

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After the Revolution, Dr. Cumberland was raised to the see of Peterborough, in the room of Dr. Thomas White, who refused the new oath. The manner in which the many bishoprics that thus became vacant were filled up by William is thus described by Bishop Burnet: 'It was visible that in all these nominations, and the filling the inferior dignities that became void by their promotion, no ambition nor court favour had appeared; men were not scrambling for preferment, nor using arts or employing friends to set them forward; on the contrary, men were sought for and brought out of their retirement, and most of them very much against their own inclinations.' (*Hist. of his Own Time*, vol. ii. p. 76.) These remarks are particularly applicable to Dr. Cumberland's case. 'The king was told,' says Mr. Payne, his chaplain, to whom we are indebted for a brief, and that the only, memoir of Cumberland, 'that Dr. Cumberland was the fittest man he could nominate to the bishopric of Peterborough. Thus a private country clergyman, without posting to court,—a place he had rarely seen,—without suing to great men, without taking the least step towards soliciting for it, was pitched upon to fill a great trust, only because he was fittest for it. He walked after his usual manner on a post-day to the coffee-house, and read in the newspaper that one Dr. Cumberland, of Stamford, was named to the bishopric of Peterborough; a greater surprise to himself than to any body else.' (Preface to Sanchoniathon's *History*, p. xii.) This was in the sixtieth year of his age; but his health was still good, and he entered with great zeal on the performance of his new duties. He had commenced, some years before, a critical examination of Sanchoniathon's Phœnician History; and this work still occupied him for some years after he was made a bishop. It led him to several cognate inquiries, the results of which were published some time after his death under the title of 'Origines Antiquissimæ, or Attempts for Discovering the Times of the first Planting of Nations.' Neither was the series of dissertations on Sanchoniathon's History published during his lifetime. They were both edited by Mr. Payne, and published, the latter in 1720, the former in 1724. At the age of eighty-three Dr. Cumberland, having been presented by Dr. Wilkins with a copy of his Coptic Testament, then just published, commenced, like another Cato, the study of Coptic. 'At this age,' says Mr. Payne, 'he mastered the language, and went through great part of this version, and would often give me excellent hints and remarks as he proceeded in reading of it.' He died on the 9th of October, 1718, in the eighty-seventh year of his age.

Dr. Cumberland's private character appears to have been a perfect model of virtue. 'When I read,' says Mr. Payne, 'the character given in Scripture of Moses, that "he was very meek above all the men that were upon the face of the earth," and that given to Nathaniel by our Saviour, that "he was an Israelite indeed, in whom was no guile;" I cannot but apply them to this extraordinary person, for I think there never could be a man after them whom these characters do more truly fit.' He was a man also of most extensive learning. 'He was thoroughly acquainted with all the branches of philosophy: he had good judgment in physic, knew everything that was curious in anatomy, had an intimacy with the classics. Indeed he was a stranger to no part of learning, but every subject he had occasion to talk of, he was as much a master of it as if the direction of his studies had chiefly lain that way. He was thoroughly conversant in scripture, and had laid up that treasure in his mind. No hard passage ever occurred, either occasionally or in reading, but he could readily give the meaning of it, and the several interpretations, without needing to consult his books.'

The Inquiry into the Laws of Nature[*] was called forth by the political and moral works of Hobbes. Hobbes is charged therein with atheism; he is represented, as he is also represented in Cudworth's 'Eternal and Immutable Morality,' as denying any standard of moral good and evil other than one fashioned by human law; he is upbraided for the forms of expression that in a state of nature all men have a right to all things, and that the state of nature is a state of war. These differences between Hobbes and Cumberland may be all traced to a misapprehension of the former's meaning. As regards Cumberland's own views of moral science, they are substantially correct. Objections may be made to the phrases, 'law of nature' and 'right reason,' by which last he denotes the set of faculties employed in the determination of moral good and evil. But though in a science where the chief disputes that have arisen are verbal disputes, phraseology cannot be accounted unimportant, and though that phraseology, combined with clumsiness of style and arrangement, has prevented a general perception of the substantial merits of the work, we must, while we regret the defect and its consequences, do justice to a really correct system. Tendency to affect the general good is made the standard of morality. To endeavour to effect the greatest amount of general good, is the one great duty, or the one great 'law of nature;' and we know, according to Cumberland, that it is a duty or law of nature, or law of God, because we know that an individual derives the greatest happiness from the exercise of benevolence, and that God desires the greatest possible happiness of all his creatures. Carrying out the fundamental principle, that the greatest general good is to be sought, he deduces the several particular duties or particular 'laws of nature.' He founds government upon, and tests it by, the same principle.

Sir James Mackintosh, after passing one or two other criticisms on Cumberland's system, observes: 'He had a momentary glimpse of the possibility, that some human actions might be performed with a view to the happiness of others, without any consideration of the pleasure reflected back on ourselves. But it is too faint and transient to be worthy of observation, otherwise than as a new proof how often great truths must flit before the understanding before they can be firmly and finally held in its grasp.' The pretty sentiment of the second sentence is doubtless the secret of a criticism, which, passed upon a system that makes the general good the end, and spoken of the good accruing to one's self from the pursuit of the general good only as an index to the will of God, is, at best, unmeaning. Sir James afterwards says: 'Throughout his whole reasoning, he adheres to the accustomed confusion of the quality which renders actions virtuous with the sentiments excited in us by the contemplation of them.' 'The quality which renders actions virtuous' is, according to Cumberland, their tendency to increase the general good. 'The sentiments excited in us by the contemplation of them' are, the sentiments of moral approbation and disapprobation. Does Cumberland confound these sentiments with a tendency to increase general good? Can this, which Sir James Mackintosh calls an 'accustomed confusion,' ever have taken place? (*Dissertation on Ethical Philosophy*, sec. v.)

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[*] The following is the title in full of the work:—'De Legibus Naturæ Disquisitio Philosophica, in qua earum forma, summa capita, ordo, promulgatio, et obligatio, e rerum natura investigantur; quinetiam Elementa Philosophiæ Hobbianæ, cum moralis tum civilis, considerantur et refutantur.'

The saving effected in the sums expended for the relief of the poor in 1836, as compared with the expenditure of 1835, is therefore rather less than 10¼ per cent. The amount of the other items is however still less in proportion than that of the preceding year, reducing the whole amount of saving to nearly 14 per cent.

From a parliamentary report on the subject, made in 1836, it is found that the number of turnpike trusts in Cumberland is 14; the number of miles of road under their charge is 215; the annual income arising from the tolls and parish composition, in 1834, was 17,365*l.* 15*s.* 2*d.*; and the annual expenditure, 17,655*l.* 11*s.* 11*d.*

The amount of expenditure of county-rate in the year 1834 was 11,161*l.* 15*s.* 8½*d.*—thus disbursed:

	£.	*s.*	*d.*
Bridges, building, repairs, &c. .	6,437	7	10
Gaols, houses of correction, &c., and maintaining prisoners, &c. .	1,552	19	3
Shire halls and courts of justice—building, repairing, &c. . .	44	9	7
Prosecutions . . .	1,078	13	8
Clerk of the peace . . .	448	11	11
Conveyance of prisoners before trial .	123	4	3
,, of transports . .	132	12	0
Vagrants—apprehending and conveying	147	12	7
Constables—high and special .	200	0	0
Coroner	278	8	3
Miscellaneous . . .	717	16	4½

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The 'Inquiry', as may be inferred from the Latin title which has been given, was written in Latin. It was printed in a most inaccurate way, and the innumerable errors of the original edition have been perpetuated in the several German and London reprints. Dr. Cumberland left an interleaved copy with a few corrections and additions; in this same copy the whole text was revised by Dr. Bentley; and thus enriched, the copy was presented to the library of Trinity College, Cambridge, by Richard Cumberland, the great-grandson of the bishop, and grandson of Dr. Bentley. An abridged translation was published by Mr. James Tyrrel in 1701, during Dr. Cumberland's lifetime. Mr. Maxwell, an Irish clergyman, published a translation in 1727, prefixing and appending some original dissertations. M. Barbeyrac published a translation into French in 1744, having been allowed the use of the interleaved copy containing the author's and Dr. Bentley's corrections. A third English translation by the Rev. John Towers, D.D., appeared in 1750. (Payne's Preface to Cumberland's Sanchoniathon's *History;* Kippis's *Biographia Britannica.*)

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[*] The following is the title in full of the work:—'De Legibus Naturæ Disquisitio Philosophica, in qua earum forma, summa capita, ordo, promulgatio, et obligatio, e rerum natura investigantur; quinetiam Elementa Philosophiæ Hobbianæ, cum moralis tum civilis, considerantur et refutantur.'

CUMBERLAND, RICHARD, a favourite dramatic writer and miscellaneous author of the last century, great-grandson of Richard Cumberland, bishop of Peterborough, and grandson by the mother's side of Dr. Richard Bentley, was born February 19, 1732,[*] in the lodge of Trinity College, Cambridge. He was placed successively at the public schools of Bury St. Edmund's and Westminster; and at the early age of fourteen commenced his residence at Trinity College, Cambridge. Though during his two first years he had entirely neglected his mathematical studies, he distinguished himself highly by readiness and skill as a disputer in the schools, and obtained the degree of tenth wrangler. Two years after, he was elected fellow of Trinity. It was his intention to enter the church, and devote himself to literature and the duties of his profession. From these views he was withdrawn by being appointed, in the same year, private secretary to the earl of Halifax, then first lord of trade, whom he accompanied, on his appointment to be lord lieutenant, to Ireland in 1760. Through this connection his father became bishop, first of Clonfert, afterwards of Kilmore. To Cumberland himself the connection brought little benefit. But after passing through one or two subordinate offices, he was appointed secretary to the Board of Trade, soon after Lord George Germaine became first lord in 1775, and held that office until the suppression of the board in 1782. In 1780 he was sent on a confidential and secret mission to the court of Madrid. This seemingly fortunate appointment proved the source of no small loss and vexation, in consequence of his necessary expenditure to the extent of 4500*l.* beyond the money which he received at starting, of which no portion ever was repaid. On this subject we have only his own *ex parte*, but uncontradicted, statement: there is every appearance that he was exceedingly ill used.

After the reduction of the Board of Trade he received a compensation allowance, and retired to husband his diminished means at Tunbridge Wells. He now devoted himself altogether to literature, which had hitherto been only his amusement; and tried his powers in the multifarious departments of opera, farce, comedy, tragedy, occasional, lyric, and sacred poetry, pamphlets, novels, essays, and even divinity: but he will hardly be remembered except as an essayist, and as the author of several successful comedies, of which only the West Indian, the Wheel of Fortune, and the Jew need be mentioned. The West Indian obtained great popularity on its first appearance, and is still a stock piece: it was in Major O'Flaherty, one of the chief characters, that the eminent comedian Moody made his first favourable impression on the public. The Jew was an honourable attempt to combat popular prejudice against the Jewish nation. The Wheel of Fortune is identified with John Kemble, who made Penruddock one of his very effective characters. Many other of his dramatic pieces, of which there are at least thirty-two, were popular at the time of their production; and even those which had little sterling merit added for a time to his reputation, by keeping his name continually before the public: but to the best of our recollection there were no others which now require notice.

As an essayist, he rode to fame on the shoulders of Bentley, from whose manuscripts he derived the learning of those series of papers in the 'Observer,' on Greek poetry, which contain a rich collection of translated fragments of the comic poets. The merits of the translations, however, belong to Cumberland. There are also a number of valuable critical essays, chiefly on the drama. The entire work proceeded from Cumberland's pen, and affords honourable evidence of the author's fertility of imagination, knowledge, humour, and varied power of composition. His translation of the 'Clouds of Aristophanes' is elegant, but he has altogether missed the spirit of the original.

One of Cumberland's pamphlets that appeared without his name, entitled 'Curtius rescued from the Gulph, or the Reply Courteous to the Rev. Dr. Parr, in answer to his learned pamphlet, entitled "A Sequel,"' &c., is no unfavourable specimen of the author's powers of humour and sarcasm, and his readiness at paying off a mass of learned quotations in coin of the same but a more current kind.

His memoirs, published in 1806, is a very amusing book, full of interesting anecdotes of the men of his time, which will give the reader a thorough insight into the vain and irritable character of the author. His reputation was unblemished in the discharge both of his public and private duties; and his society was much courted for his brilliant conversation. He is recorded to have had one weakness quite at variance with the pride of character to which he lays claim, a habit of flattery which was succeeded by bitter sarcasm as soon as the objects of it had turned their backs. For such a practice it is a poor excuse to say that we suppose it to have originated not in malevolence, but in the straits to which a talker by profession may be continually put to maintain his reputation.

Mr. Cumberland died, after a few days' illness, May 7, 1811.

CUMBRIAN MOUNTAINS. These form a group in the north-western part of England, occupying rather more than a third of Cumberland, perhaps one-fifth of Westmoreland, and a small part of North Lancashire. The road leading from Kendal to Carlisle through Shap, may be considered as its eastern boundary; but the Shap Fells are united by high land to the Pennine Mountains, which extend farther east between Westmoreland and Yorkshire, and likewise north and south from their junction with the Cumbrian range. The highest part of that road is 1187 feet above the sea. From this line the mountains extend westwards, and terminate with Dent Hill, a few miles from Whitehaven. The most northern point of the mass is Fell Top, near Hesket-new-market in Cumberland, and the most southern the slate quarries near Ulverston in Lancashire. From north to south the group measures about 37 miles, from east to west about 35 miles. The whole system probably covers a surface little short of 700 square miles.

This group consists properly of one immense mass of rock, furrowed by narrow and deep valleys, the direction of which is towards all the points of the compass. By these valleys a large number of ridges is formed. That part which is connected with the Pennine range by the Shap Fells may be considered as the line of its axis, which in its western direction passes through Helvellyn (3055 feet), embraces Red Pike and Pillar (2893 feet), and terminates with Dent Hill (1110 feet). The high cape of St. Bees Head (222 feet), which lies in the prolongation of this line, is separated from Dent Hill by low ground.

Several high peaks occur to the north of this line. One extensive mass of rocks, lying to the east of Bassenthwaite Water, is overtopped by the three high summits of Saddleback (2787 feet), Skiddaw (3022 feet), and High Pike near Hesket-new-market (2101 feet). To the south-west of Bassenthwaite Water is Grasmere Fell (2756 feet). On the south of the axis, the highest summits are due south of Pillar. In this part are Scaw Fell (3092 feet), and Bow Fell, near Eskdale (2914 feet). East of them, Coniston Fell (2577 feet) is more isolated. Black Comb (1919 feet) is much farther south, near Duddon mouth, on the west side of that æstuary.

According to the recent observations of Professor Sedgwick, the greatest part of this cluster of mountains is formed by stratified deposits of slaty texture. More than the northern half consists of green quartzose roofing slate, and the southern portion of grauwacke slate. The line separating both formations runs from the northern extremity of Winandermere Lake to Shap Fells on the east, and nearly in a straight line. On the west it continues at some distance from the northern extremity of Coniston Water, and then runs southward to Broughton on Duddon mouth. A narrow band of limestone and calcareous slate separates the rmations. Black Comb consists of old black slate. ite is found between Black Comb and Wast Water, on rth side of Ennerdale Water, in Skiddaw, and between orthern part of Ullswater and Penrith. A broad of coal encircles on the north the mountain limestone, uns from Whitehaven by Workington, Maryport, a south of Wigton and a little north of Hesket-newet, to nearly as far as Penrith.

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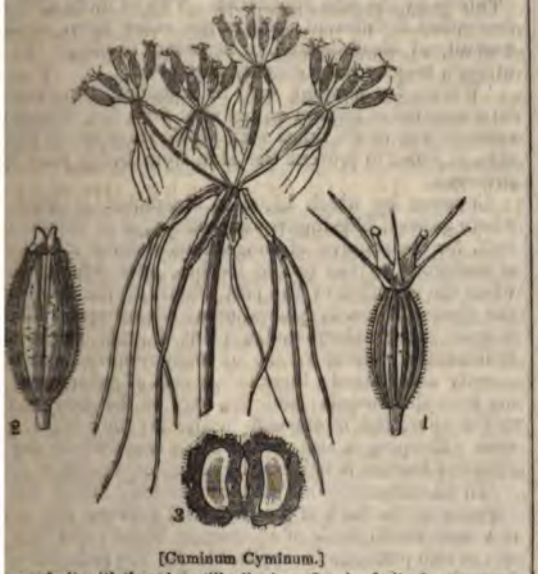
[*] In the last edition of the 'Encyclopedia Britannica' this date is erroneously given February 29, 1722.

s group of mountains is well known for its picturesque ry. The mountains rise with steep acclivities, espe- those west of Helvellyn, inclosing narrow but in parts well-cultivated valleys, which derive a great f their beauty from the numerous lakes which occupy idest part of them. To the north of the central range, ding from east to west, are Hawes Water (714 Ullswater (460 feet), Thirlmere (473 feet), Derwent (222 feet), Bassenthwaite Water (210 feet), and mock (260 feet above the sea). To the south axis, proceeding from west to east, are Ennerdale Wast Water (160 feet), Coniston Water (105 feet), mere (196 feet), and Winandermere (116 feet above ea). The whole mountain mass declines more ra- to the north than to the south, as the different elevation lakes evidently shows. For particulars on the lakes alleys, see BORROWDALE, CUMBERLAND, WESTMORE- and LANCASHIRE. (*Geography of Great Britain reland*, by the Society for the Diffusion of Useful ledge; Sedgwick in *Geol. Trans.*, Sec. Series, vol. iv., art, 1835.)

MI'NGIA. [CONCHACEA, vol. vii. p. 430.]

MI'NUM CY'MINUM, or CUMIN, is an umbel- s plant of annual duration, found wild in Egypt yria, and cultivated from time immemorial for the of its agreeable aromatic fruit, which, like that of ay, Dill, Anise, &c., possesses well-marked stimulating arminative properties. Cumin grows about a foot and is very little branched; it is smooth near the d, but slightly downy near the end of its branches. ves are deeply cut into long capillary segments. The l and general involucres consist of similar leaves, but r. The flowers are white or reddish: the fruit is cted at the side, surmounted by a calyx with long pointed divisions, and has each of its halves marked e unequal elevated ridges, all of which are slightly ated, especially the secondary ones, under each of there is a vitta. Two vittæ are present on the com- re, and the albumen is not involute.

nin is said to be employed in flavouring Dutch cheese.



[Cuminum Cyminum.]

oung fruit, with the calyx still adhering: 2, a ripe fruit; 3, a transverse of the latter, showing the ridges, the vittæ, and the commissure.

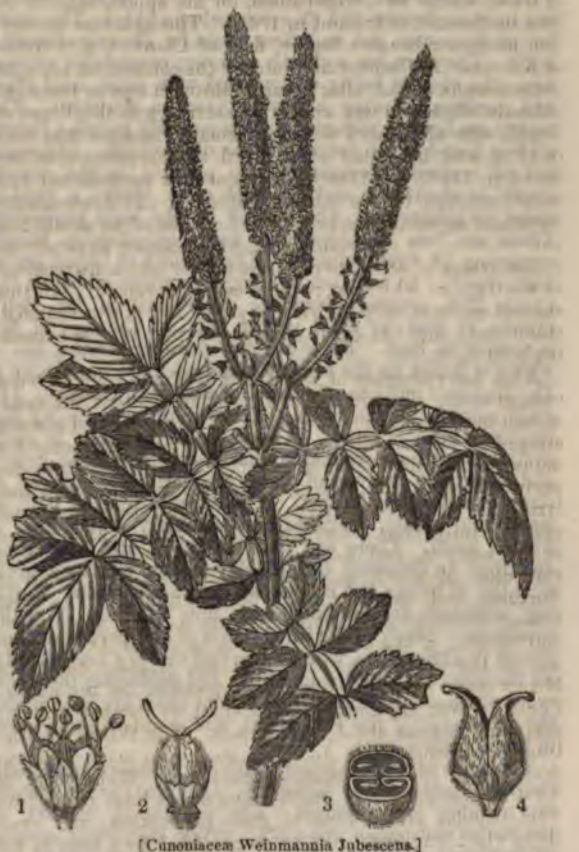
NE'O. [CONI.]

NITZ, MARIA, born at Schweidnitz, in Silesia, the beginning of the seventeenth century. She was kable, according to report, for the great variety of nowledge, but the only published specimen is her ia Propitia, sive Tabulæ Astronomicæ,' &c., printed ls in 1650, and at Frankfort in 1651. This work was composed in a Polish convent, the civil troubles having driven the authoress from her country. It is an attempt to simplify the methods derived from Kepler's laws, and in particular to avoid the use of logarithms; more remarkable from the circumstance of the writer being a female than from any particular merit.

The principal instructor of Maria Cunitz in astronomy was a countryman of her own, named Loewen, whom she married on the death of her father. The preface and dedication of the tables were written by him. She died at Pitschen, in Silesia, probably after 1669. (Delambre, *Astron. Moderne*; Lalande, *Bibliog. Astron.* The latter cites Desvignoles, *Bibl. Germ.*, vol. iii., and Scheibel, *Bibl. Astron.*, p. 361—378.)

CUNNINGHA'MIA SINENSIS, an evergreen Chinese tree, formerly called Pinus lanceolata. It has narrow oval lanceolate stiff pungent leaves, which, when the plant is old enough, collect into cones, after the manner of an Araucaria. The plant will live near London, in the open air, with a little protection in winter.

CUNONIA'CEÆ, a small natural order of polypetalous apocarpous Exogens, allied to Saxifragaceæ, with which they were formerly united. They are trees or shrubs, inhabiting Southern Africa, South America, and very sparingly the East Indies. In most respects their flowers are constructed like those of Saxifragaceæ, but the styles are more consolidated, and they have a dense spiked or racemose inflorescence instead of a few loosely-arranged blossoms. The leaves are opposite, and furnished with interpetiolar stipules, and being pinnated in most cases, give the plants a peculiar aspect. Little is known of their properties, except that their bark is sometimes very astringent and used for tanning purposes.



[Cunoniaceæ Weinmannia Jubescens.]

1, a perfect flower; 2, an ovary; 3, a transverse section of the same; 4, a ripe fruit.

CUPAR FIFE (so named in contradistinction from the small towns of Cupar Angus and Cupar Grange in Perthshire), is the county town of Fife, and has separate jurisdiction as a royal burgh, in which capacity it formerly enjoyed many municipal privileges, being called by Camden 'Burgus Insignis.' At present it is the most important place in the county, not only as the seat of the county courts for the administration of justice, by which it is made the residence of numerous legal practitioners, but on account of its manufactures, corn-market, and numerous fairs for agricultural produce. It is situated nearly in the middle of the peninsula of Fife, at the confluence of the small streams Eden and Lady Burn, or St. Mary, and about 10 miles west of St. Andrews; having, on the south, a range of high hills, and on the north a fertile country, diversified with hills and numerous woods. The site of the town is only 25 feet above the level of the sea, from which it is distant 6 miles; the temperature of the air is mild, and is said to be very favourable to longevity. It is a place of great antiquity. In the parliamentary rolls of David II. are the names of commissioners from 'the royal burgh of Cupar,' and on a mound, called the Castle Hill, there formerly stood a castellated fortress which was the head-quarters of the chiefs of the family of Macduff, the feudal earls or thanes of Fife. At the foot of the Castle Hill was a convent of Dominican monks, or Black Friars. Of these establishments no vestiges now exist; but in opening the surface of their sites several skeletons and other relics have been discovered. A green esplanade before the castle, still called the Play Field, was antiently used for the performance of the religious shows called *mysteries* and *moralities:* and here, in 1555, was acted the famous David Lindsay's witty drama of the 'Three Estates,' a popular satire on the priesthood, which greatly promoted the subsequent religious revolution.

Cupar consists principally of one long street, extending from west to east, but several others contain new and handsome houses. The public buildings are neat and convenient, with the exception of the gaol, which, with an exterior resembling a gentleman's mansion, affords very bad accommodation for the prisoners. Besides the parish church, which is plain and commodious, there are various dissenting meeting-houses and an episcopalian chapel. The number of ale-houses, not including shops for the sale of spirits, is 53. The town has a cleanly and very respectable appearance, the vicinity being ornamented with some neat villas and gardens. Spring and well water is abundant. The streets are lighted with gas, and are partially paved, a luxury seldom found in the country towns of Scotland. The number of resident procurators who practise in the county courts is about 30; making, with their clerks, a total of about 90 inhabitants who subsist by the legal profession. There are two reading-rooms, and a subscription library consisting of 4000 volumes. The schools of Cupar are in high repute. In addition to a large grammar-school on the Castle Hill, several others are established on Dr. Bell's system, so that no child in the town at the age of five is unable to read. There are two printing-presses, one of which is famed for the beautiful and accurate impression of Dr. Hunter's editions of several of the Latin Classics. The chief manufacture is linen. Three spinning-mills for flax employ about 240 hands. The water of the Eden is made available for the movement of machinery of 80 horse-power, and about 900 weavers of linen are constantly engaged in their own dwelling-houses. A snuff-mill, worked both by water and steam, manufactures annually 60,000 lbs. of Scotch snuff. There are two tan-yards, and breweries; and from an immense bed of clay in the vicinity a great quantity of bricks and coarse earthenware is made. Building materials are supplied from four quarries of white sandstone. Many of the inhabitants of the parish are employed in agriculture, which is carried on very successfully, all the adjacent land being arable, and producing the finest crops of wheat and turnips. Excellent races are held under the patronage of the Fife Hunt, and a subscription pack of fox-hounds is kept.

The town of Cupar, jointly with St. Andrews and Craill, the two Anstruthers, Kilkenny, and Pittenween, sends one member to parliament. The population, in 1831, of the burgh and parish was 6473. (*New statistical account of Scotland;* Carlisle's *Topog. Dict. of Scotland;* Chambers's *Gazetteer of Scotland.*)

CUPEL, CUPELLATION. [Assaying.]

CUPID (Cupído, *desire*), in Latin mythology, the god of love. Cicero (*Nat. Deor.*, iii. 23) enumerates three deities, or rather three forms of the same deity, bearing this name, each the son of a different Venus, by a different father. Of these the principal, and the one who is usually meant when the name of Cupid occurs without qualification, is the son of Mercury and Venus daughter of Dione. He is represented by the poets as a child armed with bow and arrows, as an emblem of the inspiration of love, through the eye, from a distant object. Hence the metaphorical expressions of 'darts of love,' 'eyes darting desire,' and the like. Often he is represented as blind, in reference to the ill-assorted connections, the unrequited affection, or the neglect of reason and duty, of which a hasty passion is often the cause. By artists he is variously designed; sometimes riding on a lion, or breaking Jupiter's thunderbolts, to signify that the strongest yield to the influence of love: often with a butterfly, in allusion to his amour with Psyche. [Psyche.] Athenæus (xiii. 2) quotes a beautiful passage from the Phædrus of Alexis, to show the impossibility of representing Cupid to the senses.

CU'POLA. [Dome.]

CUPPING is of two kinds; one by which some blood is taken away, generally simply termed cupping; the other when no blood is abstracted, which is accordingly termed dry cupping. The preliminary steps of the operation are the same in both cases: the part to which it is intended to apply the cupping-glasses is washed with warm water, or a warm cloth is merely applied to it, in order to attract blood to the part. A small bell-shaped glass, a portion of the air of which has been expelled by holding it for an instant over the flame of a spirit-lamp, is immediately applied to the spot which has been prepared. The usual amount of pressure on the part being diminished, the blood flows to the part, and produces distension of the vessels and elevation of the surface, as well as a purple or livid colour. If it be intended to take away blood, the cupping-glass is speedily removed, and an instrument called a scarificator, containing a number of lancets, sometimes as many as twenty, is applied, and made to act so as to inflict a corresponding number of incisions on the skin and subjacent vessels. 'The instrument is so constructed, that the depth to which the lancets penetrate may be made greater or less at the option of the practitioner.' It is not in general advisable that the depth should be very great, as more blood flows, and the vessels will continue to bleed longer, if only partially divided, than if completely cut through. The cupping-glass, exhausted as before, is to be immediately replaced, and if skilfully applied, and the air has not been too much rarified, by which too great pressure is made by the edges of the glass, a considerable quantity of blood will flow into it. When nearly full, or if the blood begin to coagulate, the glass is to be carefully removed, the wounded part quickly washed with a sponge with warm water, and the glass having been emptied and washed, is to be again applied, if a sufficient quantity of blood should not have been obtained by the first application. Two or more glasses may be applied to different spots at the same time, so that the quantity of blood desired, or necessary to obtain the object in view, may be more quickly abstracted.

'Where dry cupping only is intended, the glasses may be permitted to remain on the skin for a few moments, and replaced five or six times with a little variation of their position, in order to prevent the skin from being hurt by their pressure.'

Cupping by which blood is abstracted is used either where general bleeding is unnecessary, or as supplementary to it, for the removal of congestions or local affections. It is analogous to the use of leeches, over which, however, when the situation of the part admits of the application of the glasses, it has in general many advantages. The blood is more rapidly abstracted, a point of great importance in inflammatory diseases; the quantity removed can be more exactly ascertained; there is less risk of subsequent bleeding from the wounds; and the part of the body subjected to the operation is exposed to the air for a much shorter time. Cupping is also preferable in cases where the application of leeches is followed by severe erysipelas of the skin.

'In all inflammations and congestions about the head, cupping on the back of the neck and between the shoulders is a most useful mode of abstracting blood; and this operation is also particularly applicable for the removal of blood from the parietes of the chest and abdomen in diseases of the different viscera. Its use however is only admissible when it can be employed without exciting pain, and irritating the diseased organ.' Many cases of impending apoplexy may be warded off by the timely application of cupping-glasses to the neck, aided by a quickly-acting cathartic. Where the abstraction of blood is inexpedient or unnecessary, dry-cupping is often resorted to with benefit. In adynamic states of fever, especially where the lungs are complicated in the diseased action, if 'farther depletion cannot be ventured upon, dry-cupping on the back or chest will sometimes be serviceable.' (Copland's *Dictionary of Medicine*, p. 930.) Dry-cupping often affords great and immediate relief in many pains of the side, not inflammatory, but hysterical, which occur in females. The pains of the back which likewise occur in females at particular times may be much mitigated by dry-cupping.

Another and most important application of cupping is the prevention by its means of the absorption of poisonous fluids from wounds. For this purpose anything by which a partial vacuum over the wounded part can be produced will answer, such as a wine-glass, tumbler, or tea-cup with a smooth margin, from which the air has been partially expelled by holding it for a moment over a lighted candle. This mode was in use among the antients, has been revived among the moderns, and is practised by the South Americans in cases of the bites of venomous serpents, by means of a funnel-shaped calabash. The Greeks called a cupping instrument *σικύα* (*sikua*), from its bearing some resemblance to the form of a melon or gourd. (Empson's *Narratives of South America*, p. 66; Wardrop *on Blood Letting*: Cooper's *Surgical Dictionary*.)

CUPRESSUS, a coniferous genus, distinguished from the firs and pines by its leaves being mere scales, its cones formed of a small number of peltate woody bracts, and the seeds very small, angular, and several to each bract. Botanists mention several species, but of these three only are suited to the climate of Great Britain.

C. sempervirens, the common upright cypress, is a native of the warmer parts of Europe, but has long since been transferred to gardens for the sake of its deep evergreen branches and leaves, and the gloomy air it imparts to the situations which it occupies. Its timber is of great durability: it is probable that gopher-wood, which some have referred to the cypress, was rather the timber of *Thuja articulata*. It is not much cultivated in England, the climate being too damp and cold for it in summer; otherwise it is sufficiently capable of resisting the cold of winter. Its formal mode of growth moreover is not to the taste of the people of this country.

C. horizontalis, the spreading cypress, is a far handsomer species, partaking in all the excellent qualities of the last, being more hardy, and becoming a beautiful object with its graceful spreading branches, loaded, as they usually are, with large round cones. Miller has rightly pointed out the difference between this and the last, but it is nevertheless exceedingly uncommon in the collections of this country. The spreading cypress of the nurseries is nothing but a very slight variety of *C. sempervirens*.

C. lusitanica, the cedar of Goa, differs from the two preceding in its much freer mode of growth, and in its leaves having a singularly glaucous colour. It is said to be of Indian origin, but has long since been naturalized in Portugal, where, about Cintra, it acquires a large size. In England it will only succeed well in the warm parts of the southern coast.

CUPRESSUS DI'STICHA. [Taxodium.]

CUPRESSUS THUIOIDES. [Thuja.]

CUPULE, a kind of cup or involucre surrounding certain kinds of fruit, and composed of bracts more or less grown together. In the oak the cup of the acorn is the cupule; in the hazel-nut it is the husk; in the beech and chestnut the prickly shell; and in the hornbeam the lobed bract.

CUPULI'FERÆ. [Corylaceæ.]

CURAÇOA or **CURAZAO**, an island in the Caribbean sea, near the coast of Venezuela, in 12° 6′ N. lat., and 69° 3′ W. long. Its length from north-west to south-east is 35 miles, and its greatest breadth 6 miles. The island is generally low on the eastern side, but there is a high hill on the north-east, and another still higher on the south-east. There are also some high hills on the west side, which are seen from a considerable distance at sea. The island is wholly dependent upon rain for water, and the soil so wanting in fertility that the inhabitants are partly supplied with provisions imported from other places. It yields a small quantity of tobacco, and affords a large supply of salt. The shores are so bold that vessels of considerable size may sail round the island within a cable's length. There are several harbours; the principal one, Santa Anna, is on the south-west side of the island. The entrance is very narrow; on the eastern side is Fort Amsterdam, and on the opposite side of the harbour is the town of Curaçoa, said to be one of the handsomest in the West Indies.

Curaçoa was settled by the Spaniards early in the sixteenth century; it was taken in 1632 by the Dutch, and was captured by the English in 1798, but restored at the peace of Amiens. It was again taken by the English in 1806, and finally given up to Holland at the general peace in 1814.

CURACY and **CURATE.** [Clergy.]

CURA'TOR (from curare, *i. e. to care* or *take care*), one who is appointed to take care of anything: in this general sense there were many kinds of curators.

In the civil law the word denotes one who is appointed to administer the estate of any person who is not legally competent to manage his property. 1. There was the curatorship, *i. e.* guardianship, of minors (cura minorum). Every person who was sui juris, *i. e.* not subject to paternal or domestic dominion, but who was still under age, was put under the superintendence of a guardian. But the Roman law distinguishes two kinds of guardianship: viz. tutelage (tutela) and curatorship (curatela). (Ayliffe's *New Pandect*, book ii., tit. xxxix.) The former kind of guardianship was in use if the minor was impubes, *i. e.* if a male minor was not fourteen and a female not twelve years old. The guardian in this case was called tutor, and the minor, pupillus. After the tutelage was ended, the minor received a curator till he was twenty-five years of age. This distinction had some important consequences in the civil law, which have only recently fallen into disuse even in countries where the Roman law is still in force. According to the strictness of law, the curatorship terminated with the twenty-fifth year of the minor; but it could also be determined by a solemn declaration of the emperor that the minor should be of age. (C. 2, tit. 45, de iis qui veniam ætatis.) This was called receiving veniam ætatis, and it could take place in the case of males in their twentieth, and females in their eighteenth year. 2. As spendthrifts and deaf and dumb persons could not legally administer their estates, they also were put under the superintendence of a curator. 3. A third kind of curators was the curator bonorum, *i. e.* a trustee for the administration of the estate of absent or deceased persons and insolvent debtors. Between this curatorship and that of a minor there was this important difference; the latter was regarded as a public office, which could not be refused, except for such reasons as the law allowed.

(Heineccius, *Jus. Civ. secundum ordinem Pandectarum*, pars iv., § 288, 398, 400-403; vi. 275.)

Curators in antient Rome were also public officers of various kinds, particularly after the time of Augustus, who established several officers with this title. (Suet., *Vit. Aug.*, cap. 37.) 1. Curatores viarum, *i. e.* curators who superintended the laying out and repairing of the public roads. This office existed under the Republic, but it was only held as an extraordinary office, and was conferred only for special purposes. 2. Curatores operum publicorum, aquarum, cloacarum, who had the superintendence of the public buildings, theatres, bridges, aqueducts, and cloacæ. 3. Curatores alvei Tiberis, who were the conservators of the Tiber. 4. Curatores frumenti populo dividundi, whose duty was to distribute corn among the people. Under the emperors we find other officers with the name of curatores; as, for instance, the curatores ludorum, who had the superintendence of the public amusements: and curatores reipublicæ, also called logistæ, whose duty it was to administer the landed property of municipia.

CU'RCUMA LONGA, the Turmerick plant, is an herbaceous fleshy-rooted plant, found wild in various places in the East Indies, where also it is extensively cultivated. It belongs to the natural order Zingiberaceæ, in the general aromatic qualities of which it slightly participates. The root is divided into several fleshy fingers, of an oblong form, and as thick as the thumb. The leaves spring at once from the crown of the root, have a lanceolate figure, sheathe each other at the base, are about a foot long, and produce from their centre a short thick leafy spike, in the axil of whose bracts are seated the inconspicuous pale cream-coloured flowers. Dr. Roxburgh gives the following account of the manner in which the plant is cultivated: 'the ground must be rich, friable, and so high as not to be drowned in the rainy seasons, such as the Bengalees about Calcutta call Danga. It is often planted on land where sugar-cane grew the preceding year, and is deemed a meliorating crop. The soil must be well ploughed and cleared of weeds, &c.

It is then raised in April and May, according as the rains begin to fall, into ridges, nine or ten inches high, and eighteen or twenty broad, with intervening trenches, nine or ten inches broad. The cuttings or sets, viz. small portions of the fresh root, are planted on the tops of the ridges, at about eighteen inches or two feet asunder. One acre requires about from nine hundred such sets, and yields in December and January about two thousand pounds weight of the fresh root.'

CURDISTAN. [KURDISTAN.]

CURFEW. The custom of covering up their fires about sun-set in summer, and about eight or nine at night in winter, at the ringing of a bell called the *couvre feu*, or curfew bell, is supposed to have been introduced by William I., and to have been imposed upon the English as a badge of servitude. Henry, in his *History of Britain*, 4to. edit., vol. iii., p. 567, however, says this opinion does not seem well founded, for there is sufficient evidence that the same custom prevailed in France, Spain, Italy, Scotland, and probably in all the other countries of Europe, in this period; and was intended as a precaution against fires, which were then very frequent and very destructive, when so many houses were built of wood. Henry I. restored the use of lamps and candles at court in the night after the ringing of the curfew bell, which had been prohibited by his predecessors. (Will. Malmesb., fol. 88.)

Thomson, in his *Seasons*, countenances the opinion of the tyranny of this custom:—

> 'The shivering wretches, at the curfew sound,
> Dejected sunk into their sordid beds,
> And through the mournful gloom of antient times
> Mused sad, or dreamt of better.'

But we find the curfew mentioned to a very late period as a common and approved regulation. Among the charges directed for the wardmote inquests in London, in the mayoralty of Sir Henry Colet, A.D. 1495, it is said, 'Also yf there be anye paryshe clerke that ryngeth curfewe after the curfewe be ronge at Bowe Chyrche, or St. Bryde's Church, or St. Gyles-without-Cripelgate, all suche to be presented.' (Knight's *Life of Dean Colet*, p. 6.) The same charge remained in the wardmote inquest, as printed in 1649. Hutchins, in his *History of Dorsetshire*, vol. ii., p. 267, speaking of Mapouder church, in that county, mentions land given 'to find a man to ring the morning and curfew bell throughout the year.' In the same volume, p. 422, under Ibberton, is mentioned an acre given for ringing the eight o'clock bell, and 4*l*. for ringing the morning bell. Bishop Hall, in his *Virgidemiarum*, printed in 1599 (b. iii. sat. 4), speaks of the gift of a new rope to ring the curfew bell as of occasional occurrence in his time:

> 'Whoever gives a paire of velvet shoes
> To the Holy Rood, or liberally allowes
> But a new rope to ring the curfew bell,
> But he desires that his great deed may dwell,
> Or graven in the chancel-window glasse,
> Or in the lasting tombe of plated brass.'

The curfew bell, strictly as such, had probably fallen into disuse previous to the time of Shakspeare, who in *Romeo and Juliet* applies the term to the morning bell:

> 'The second cock hath crow'd,
> The curfew bell has rung, 'tis three o'clock.'

In the *Antiquarian Repertory*, old edit., vol. i. p. 89, is an engraving of an iron implement which is called a curfew, or cover-fire, formerly belonging to Gostling, the historian of Canterbury, and presumed to be of very antient if not of Norman origin, but which in reality is no more than an *ex tempore* oven, lately if not still used in many parts of England for baking small viands: the hearth is first heated, the viand placed upon it, and then covered with this implement, the embers being raked round and above it. Either Gostling's, or a cover-fire like it, is still shown among the curiosities of the late Lord Orford's villa at Strawberry Hill.

Milner, in his *History of Winchester*, vol. i. p. 169, says the curfew was first enforced in Winchester, and thence extended to other places: but there is no authority whatever for this surmise, beyond the circumstance that William the Conqueror made Winchester one of the chief places of his residence.

CURIA. [COMITIA.]

CURISCHES HAFF, a kind of bay on the north-eastern shores of East Prussia, supposed to have originated from the throwing up of the sand and the retiring of the waters of the Baltic. From Labiau, in the south, to its opening into the Baltic at Memel, it is about 60 miles in length; at its greatest breadth, between Cranzkukren and Juwendt, nearly 28 miles: it contains altogether 588 square miles. Its confluence with the Baltic is formed by what is called the 'Memel Deeps,' which are from 800 to 1200 feet in width. It cannot properly be called a part of the sea, inasmuch as its waters are fresh, like those of the other Haffs in this quarter. It is separated from the Baltic by a very narrow neck of land, called the 'Curische Nehrung,' formed by a series of low sand banks, almost destitute of vegetation, about one to two miles in breadth—except where they taper to a point as they approach Memel—and about 70 miles in length. On this neck of land there are a few villages. The bed of the Haff is unequal and variable, and the navigation is therefore very precarious; hence the only description of vessels used here is a peculiar kind of large flat boats, and even these are unable to land along many parts of the coast. In stormy weather the navigation is very dangerous. The Dange, the Minge, and the Memel, discharge their waters into this Haff.

CURL. [POTATOES.]

CURLEW. [SCOLOPACIDÆ.]

CURNOUL, a principality formerly governed by an independent chief, and now forming one of the subdivisions of the Balaghaut ceded districts. Previous to its passing into possession of the English, the country had been subdivided into a great number of petty jaghires, and the government of the principality was so badly administered, that a great part of the lands were allowed to revert to a state of nature, and were overgrown with rank weeds and jungle. From this cause the revenue, which had amounted to twenty lacs of rupees (200,000*l*.), was reduced to one-half that sum. The family of the present nabob of Curnoul has held possession of the country by a tenure amounting almost to independence since 1651, when Curnoul was conferred as a jaghire on Khizzer Khan, by Aurengzebe, the governor of the Deccan. On the death of the nabob, Azif Khan, in 1815, the chief authority was usurped by Muzuffer Khan, his youngest son; but the lawful heir, Munawer Khan, speedily obtained his right through the intervention of the governor of Madras, who sent a detachment of troops to the capital for that purpose. [BALAGHAUT.]

CURNOUL, the capital, is a populous town, on the south side of the Toombuddra, in 15° 44′ north lat. and 78° 1′ east long. It is surrounded on all sides by the rivers Toombuddra and Henday, which are there from 700 to 800 yards wide. Some strong works have been erected on the western side of the town; but in 1815 the place held out against the assaults of the English, only one day after which it was surrendered at discretion. The buildings in the town are partly of stone and partly of mud. Travelling distance from Madras, 279 miles, and from Hydrabad 127 miles.

(Rennell's *Memoir of a Map of Hindustan*; *Report of Committee of the House of Commons*, 1832.)

CURRANT, a well-known hardy fruit produced by two species of the genus Ribes. The one *R. rubrum*, is remarkable for the mixture of sweet and acid in its fruit, and for the beauty of its semitransparent red or yellow berries. Of this the finest varieties are Wilmot's red and the white Dutch, and the sweetest Knight's sweet red and the common white. In the fruit of *R. nigrum*, the black currant, a powerful and agreeable aromatic principle takes the place of acidity; of this species the best variety is the Black Naples.

The currants of the grocers' shops are the dried berries of a small kind of grape, chiefly cultivated in the Morea and the Ionian Islands, Corfu, Zante, &c.

CURRENCY. It is the object of this article briefly to state some general facts relating to our currency, reserving for a more advanced stage of this work an examination of the conflicting theories that prevail on the subject of our monetary system.

I. *Metallic Currency.*—The metallic circulation of the United Kingdom consists of gold, silver, and copper. The actual amount of gold and silver coin in circulation at any given time within the country cannot be estimated by the amount of the metal coined; for gold and silver moneys are exported whenever a profit can be made by their exportation. The amount of moneys coined at the Mint in the year 1835 (the last return is of that year) was as follows:—gold, 1,109,718*l*.; silver, 146,665*l*.; copper, 2688*l*. It has been asserted that the average amount of our gold currency, exclusive of the amount retained by the Bank of England, is 30 millions; but the data for such an estimate are necessarily shifting and uncertain. The circulation of silver coin in this country is of very inconsiderable amount. This is the main difference between the metallic currency of the United Kingdom and that of the rest of the world. The total existing quantity of gold, when compared with the existing quantity of silver, has been stated to be as about 1 to 50, and the relative value of gold to silver is as 1 to about 15; consequently the value of the general silver currency of the world as compared with the gold currency, is somewhat more than as 3 to 1. In this country, however, gold is the only legal tender for sums above forty shillings, and consequently the metallic currency is essentially gold, the silver coins being, like the copper, only a sort of tokens auxiliary to the gold. By the present Mint regulations, a seignorage, or duty, is charged on the silver coinage, amounting to $6\frac{2}{33}$ per cent: upon the gold coinage no seignorage whatever is charged. A pound troy of the metal of which our silver coin is made consists of 11 oz. 2 dwts. of pure silver and 18 dwts. alloy; it is coined into 66 shillings. Our gold coins contain 11 parts fine gold and 1 part alloy; a pound troy of which mixture (called standard gold) is coined into 46 sovereigns and 14*s.* 6*d.* The bullion value of the silver coinage being therefore more than 6 per cent. less than the gold coinage, that portion of our metallic currency remains perfectly subsidiary to the gold currency; there is no necessity for determining the relative values of the two species of currency by an agio; the silver of the world necessarily goes to other countries where it forms the basis of the currency, either exclusively or in connexion with gold. Our metallic system of currency was established by law in 1816, although in practice the same principle had long prevailed, in consequence of the relative values of gold and silver in our Mint regulations. The English system gets rid of the complexity of a double standard, but there is reason to apprehend that this apparent simplicity may be purchased at too high a price. Our standard being that of the metal which is 50 times less in quantity and more than 3 times less in total value than the standard adopted by other nations, the fluctuations in the value of our standard are necessarily more frequent and more extensive than in the standard of silver, or in a standard of gold and silver exchangeably. Gold possessing large value in small bulk is in greater demand than silver when money is required for the purposes of governments. Mr. Rothschild told the Bank Charter Committee in 1832, that 'When the Emperor of Russia made war in Poland lately, gold which went from Hamburgh to Petersburgh and Warsaw was paying from three to four and five per cent profit.' Such operations of course suddenly affect the price of gold; and their results in altering the exchangeable value of commodities, and in contracting the entire currency, are most severely felt where gold is the standard.

II. *Paper Currency.*—This may be divided into—1. Bank Currency: 2. Private Currency. The paper currency proceeding from banks of issue consists of the notes of the Bank of England, and the notes of country banks, whether private or joint-stock banks. The circulation of the Bank of England in October, 1836, was 17,936,000*l.*; that of the private banks in September, 1836, was 7,764,824*l.*; and that of the joint-stock banks at the same date was 3,969,121*l.*: making a total bank currency of 29,669,945*l.* This bank currency of about 30 millions is based upon our metallic currency, and is convertible into that upon demand. Bank of England notes are legal tender, by the Bank Charter of 1834, by country banks; but at the Bank of England and its branches, Bank of England notes are payable in gold. The Bank of England therefore requires a sufficient supply of bullion to meet the possible demand for specie. That demand in recent times has arisen not from any want of confidence in the solvency of the Bank of England at home, but from the state of the foreign exchanges, which causes specie to be sent abroad. It is held that the only sound principle of managing a currency consisting partly of coined money and partly of paper money, is to have some authority presiding over the issues of paper which will be adequate to preserve the currency in the same state with reference to other countries as if it were purely metallic: and that the Bank of England, holding this authority, ought invariably to allow the currency to expand and contract under the action of the foreign exchanges. The monetary crisis of 1836-7 has been asserted to have been produced by a neglect of this principle, the drain upon the bullion of the Bank not having been followed by a proportionate reduction in the circulation of its notes. The examination of this and other questions affecting our currency may be better postponed to future articles. [EXCHANGES; MONEY.] 2. *Private Paper Currency* consists of bills of exchange and cheques upon bankers. The total amount of this credit currency in the United Kingdom is enormous. It is peculiarly liable to abuse: but the vast commercial business of the country could not be carried on without bills of exchange, which, passing from hand to hand, discounted and re-discounted, perform the functions of money. The deposits of individuals with bankers are considered by some economists to perform the same function; in both cases credit becomes a substitute for currency. The doctrine that 'bank deposits perform the functions of money,' has been lately brought forward by Colonel Torrens, but it was first promulgated by Mr. Pennington in 1829 We subjoin the statement of this doctrine in the words of Colonel Torrens, leaving for the present any examination of the probable extent of the operation of the principle:—

'Let us assume that the merchants and dealers within the metropolitan district require for the conducting of their business circulating money to the amount of 10,000,000*l.*, and that they actually hold this amount in coin and Bank of England paper. This being the previous state of things, let us assume again, that these merchants and dealers open accounts with the London bankers, and place with them, as deposits, the 10,000,000*l.*, in coin and notes, which they before kept in their own desks. Now this change in the manner of keeping the cash required to meet the current demands of the market, would not leave the merchant and dealer with a less command of money, with a less power of making payments and of making purchases, than they before possessed. By drawing checks upon their bankers to the amount of 10,000,000*l.*, they can come into the market just as effectually as they could before have done by bringing out coin and notes to that amount from their own cash boxes. If the whole of the 10,000,000*l.* in coin and notes deposited with the bankers were locked up in their coffers until drawn out in payment of the checks of the depositors, this locking up of coin and notes would have no conceivable effect in depriving the depositors of the power of drawing checks, and of making payments or purchases to the amount of the 10,000,000*l.* It is evident, therefore, that transferring coin and bank paper from the desks of merchants and others, and placing them for safe custody as bank deposits, could have no effect whatever, either in contracting or in expanding the currency, even if the whole of the coin and bank paper so transferred were locked up in the coffers of the bank until withdrawn in payment of the checks of the depositors. But the whole of the coin and notes deposited with the banks would not be locked up until required in payment of the checks drawn by the depositors. Bankers make their profit by lending, upon available securities, the greater part of the sums deposited with them by their customers. When our merchants and dealers deposited 10,000,000*l.* with the banks, the bankers would retain a part of the sum—say 2,000,000*l.* as a reserve, or rest, for the purpose of making occasional payments over their counters, and would employ the other 8,000,000*l.* in the purchase of stock, or of exchequer bills, or in the discount of bills of exchange. Now, it is self-evident that this would occasion an extension of the general medium of exchange. The merchants and others who had deposits with the bankers to the amount of 10,000,000*l.* would be just as able as they were before to come into the market and make payments and purchases to the amount of 10,000,000*l.*; while the persons who sold the stock and the exchequer bills, or who obtained the discounts, would be able to come into the market, and effect payments, and make purchases, to the amount of 8,000,000*l.* Thus, in this case, which has been taken for illustration, the operation of the private banks in receiving deposits, and in investing them in available securities, would have the effect of increasing the circulating medium by 8,000,000*l.*' (*Letter to Lord Melbourne*, 1837.)

CURRENT. Current water is opposed to stagnant water, and commonly used to express the motion of water in rivers, produced by the continuous but varying inclination of the bed of the streams. The word current is likewise applied to the rapid motion of the air. Further, it is used to designate the great masses of moving water, which, in modern times, have been found to exist in the ocean, and which constitute the currents of the sea.

CURRENTS AT SEA are large masses of water in the ocean or in closed seas, which are in continual motion in a certain direction; and so far they may be compared with the currents of rivers. But they occupy a much greater extent of surface, running sometimes two or three thousand miles, with an average breadth of two or three hundred miles. Though their existence was doubtless known to some of the early navigators, it is only in modern times that they have attracted general attention, and that a few facts respecting them have been collected, most of which are found in Major Rennell's very valuable treatise on the currents of the Atlantic Ocean.

Some of these currents traverse the ocean near the equatorial line, and generally run east or west, if they are not deflected from their course by the opposing land. Others, which seem to have their origin near the poles, generally run in a southern direction as far as the tropics, and sometimes farther. The currents at sea run in some parts with an increased, and in others with a decreased, rapidity; and, as might be naturally inferred, the water of these currents is either of a lower or higher temperature than the adjacent sea, according to their line of approach from a warmer or a cooler climate. This difference in some places amounts to 10° Fahrenheit; and the skilful mariner may often learn from his thermometer, the probable error of his latitude by the log.

Humboldt, ascribing the formation of these currents to the rotation of the earth, calls them currents of rotation. But he does not distinguish between the proper currents and the drift-water, which latter produces a slight western current on the surface of the ocean between the tropics. This latter motion indeed is probably caused by the united effects of the rotation and the trade-winds on the wide expanded surface of the ocean. The small degree of velocity in this current, however, shows that the stronger currents near the equator cannot arise from the same cause. Rennell, the first writer who carefully distinguished the currents from the drift-water, thinks that the equatorial currents are caused by the accumulation of great masses of drift-water near the equator by the north-easterly and south-easterly trade-winds. But this opinion will be found inadmissible when it is considered that such accumulation could only produce a superficial current, and that many instances adduced by himself evidently show that these currents are not superficial, but probably reach the bottom of the sea, and certainly go to a very great depth.

The currents which flow from the higher latitudes towards the equator are supposed to have their origin in the melting of the masses of ice which encompass the poles. But if this supposition were true, these currents would cease during the winter, unless we also suppose that the melting of the ice continues to take place even during that season at a great depth beneath the surface of the sea, an assumption which in the present state of our knowledge on this subject can hardly be admitted.

If however both these opinions respecting the origin of the currents were allowed to be true, we should still have to account for the origin of other currents, in the formation of which neither the drift-water between the tropics nor the melting of snow near the poles can possibly have any share. Of such a description is the current which seems to be formed between the southern coast of Ireland and Cape Finisterre in Spain [ATLANTIC OCEAN], and runs along the western coast of southern Europe and northern Africa to the Bight of Benin.

CURRIE, JAMES, M.D., was born 31st May, 1756, at Kirkpatrick-Fleming, in Dumfries-shire, of which parish his father was clergyman. Being originally intended for a mercantile life, as soon as he had received the rudiments of a liberal education he went out to Virginia; but upon the breaking out of the American war in 1776 he returned home, and soon after commenced the study of medicine at the University of Edinburgh. Having completed the usual course, he took his degree of M.D. at Glasgow in 1780, and immediately proceeded to London. His intention now was to go out to Jamaica, where there appeared to be a favourable opening for the exercise of his profession; but a sudden attack of illness prevented him from sailing after he had taken his passage. On his recovery he settled and began to practise in Liverpool, in 1781. Here he soon met with great success in his profession. His first publication was a biographical memoir of a deceased friend, which was printed in the 'Transactions of the Manchester Philosophical and Literary Society' for 1785. In 1790 a paper on tetanus and convulsive disorders, which he communicated to the 3rd volume of the 'Memoirs of the London Medical Society,' considerably extended his professional reputation. In 1792 he was elected a Fellow of the Royal Society. In 1793 he published a pamphlet, under the title of 'A Letter, Commercial and Political, addressed to the Right Hon. Wm. Pitt, by Jasper Wilson, Esq.,' which attracted a good deal of attention: it was an exposure of the impolicy of the war with France. In 1797 appeared the work on which his professional reputation principally rests, entitled 'Medical Reports on the Effects of Water, cold and warm, as a remedy in Febrile Diseases.' The method of treatment here recommended by Dr. Currie, affusion in cold water in cases of fever, though a remedy not to be trusted except to the most skilful hands, has since been applied in suitable circumstances with extraordinary success. A second volume of the Reports appeared in 1804, and the author was preparing a new edition of the whole work when he died. The name of Dr. Currie is best known to general readers by his edition of the works of Robert Burns, including both his Poems and Letters, which he published for the benefit of the poet's family, in 4 vols., 8vo., in 1800. It was introduced by a criticism on the writings of Burns, and 'Some Observations on the character and condition of the Scottish Peasantry,' both of which papers were drawn up with much elegance and ability. This edition has formed the basis of every succeeding collection of the poet's works. In 1804 Dr. Currie felt his health rapidly giving way; and leaving Liverpool, he spent some time in Bath and Clifton. In March, 1805, he considered himself to be so far restored, that he took a house and commenced practising in Bath; but his illness soon returned, and he died at Sidmouth on the 31st of August in the same year. (Chalmers's *Dictionary*, from a Memoir in the Magazines drawn up by Dr. Aiken.)

CURRU'CA. [BLACK-CAP; SYLVIADÆ.]

CURSO'RIUS, COURSER (Ornithology), a genus of birds of the order *Cursores*, Temm. established by Dr. Latham.

Generic character.—*Bill* as long as head; mandibles arched, and compressed towards their extremities; base depressed; tip sharp and entire; *nostrils* basal, oval, with an oblong lateral opening. First *quill* longest. *Legs* long; three front toes separated throughout; middle toe much the longest, with a serrated claw. Type, *Cursorius Isabellinus.*

Geographical distribution.—Africa seems to be the country principally inhabited by these birds, and there they are to be found generally at a distance from the sea, and in the arid inland tracts, where they run with great swiftness.

Example, *Cursorius Temminckii*, *Black-bellied Courier*, Sw. The following is Mr. Swainson's specific character and description.

'Cream-coloured brown; top of the head and breast ferruginous, nuchal collar double; the lower, with the quills and middle of the body, black; the upper and the sides of the body white. Total length from the bill to the tail eight inches; bill one inch from the gape, and half from the end of the nostrils. Legs three inches from the naked thigh to the tip of the middle toe, the claw of which is serrated internally. Tail round; the middle feathers not spotted; the two next with a black dot near the tip, which, in the next pair, is further broken into two white dots; the outer pair white.' (*Zool. Illust.* pl. 106. first series). *Locality.*—Africa (Abyssinia).

The Type, *Cursorius Isabellinus*, Meyer, Temminck, *Cursorius Europæus*, Ind. Orn., *Le Courvite*, Buff. Cream-coloured Plover, Lath. Gen. Syn. *Cream-coloured Courser*, Penn. Br. Zool., *cream-coloured Swift-foot*, Selby, has been seen in France and England, but only as an occasional visiter. Thus we find (Mont. *Orn. Dict.* last edit.) that one was killed in France, where it was seen to run with great swiftness; another was shot near St. Alban's in East Kent, the seat of William Hammond, Esq., on the 10th of November, 1785, and he presented the prize to Dr. Latham. Mr. Hammond first met with it on some light land; and so little fearful was it, that having no gun with him at that time, he sent for one, which did not readily go off, having been charged for some time, and, in consequence, he missed

: the report frightened the bird away, but after a turn or two, it again settled within one hundred f him, when he was prepared with a second shot, illed it. He observed it to run with incredible swift- nsidering its size, and at intervals to pick some- rom the ground: it was so bold as to render it diffi- make it rise in order to take a more secure aim on g. The note was unlike that of any known bird. Montagu says that one was shot in North Wales ear 1793, and preserved in the collection of the late r Sibthorp at Oxford. Mr. Atkinson, author of ompendium of Ornithology,' was also in possession cimen shot at Netherby, in April, 1816.

her of these birds was taken in Austria; and the ird in the Darmstadt Museum, alluded to by M. ack, was probably killed in Europe. Mr. Fox (*Zool.* , vol. iii., p. 492) records the death of one shot on h October, 1827, under Timberwood Hill, in Charn- orest, Leicestershire, by a tenant of Mr. T. Gis- He described it as coming flying over his head, a cry with which he was unacquainted, and it near him. Some idea of the enormous prices which one time given by collectors for rare birds killed in may be formed from the sum which Dr. Latham's n produced: Mr. Fox says it was purchased for hree guineas.

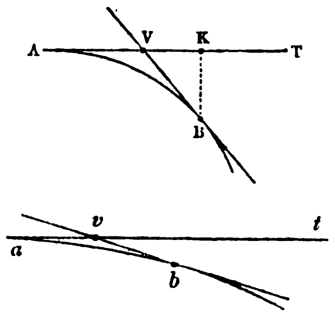
[Cursorius Temminckii.]

naparte, Prince of Musignano (*Specchio compara-* aces the form in the family Pressirostres of the order between *Otis* and *Œdicnemus*.

TATE (shortened), a term sometimes applied in ry or astronomy to a line projected orthographically plane. [PROJECTION.]

TEIN, or CURTANA, the name given to the first less sword, carried before the kings of England at ronation; also called the sword of King Edward the or. It is mentioned by both these names in Mat- aris, under the year 1236, when detailing the mar- remonial of Henry III. In antient times it was the e of the earls of Chester to bear this sword before the hich, in an emblematical form, is considered as the f mercy.

VATURE, a mathematical term expressive of the ative degree of bending which takes place near the t points of a curve. If we imagine a point to e a curve, to be continually changing the direction motion, it may change this direction either more or idly, that is, describe a line which is more or less . As in the article CONTACT, we shall first take h method of illustration grounded on the notions ive from experience, and show how the accuracy of naties is introduced into the definition. We must e the reader to have gained the ideas which are eed in the articles DIRECTION and VELOCITY. points, A and *a*, are describing two curves, the



directions of motion at A and *a* being AT and *at*. That the first curve is more curved than the second, we may easily see; and if we wished to give some notion of the comparative degree of curvature, we might proceed as follows. Measure off equal arcs AB and *ab* (remember this equality throughout), say of one inch each; ascertain the direction BV and *bv*, from which A and *a* are proceeding when they arrive at B and *b*, and measure the angles BVT and *bvt*. If we find the first to be twice as great as the second, then the phenomenon by which we recognize curvature (change of direction) is twice as great in the first as in the second. Hence we say that the curvature of the first is twice as great as that of the second.

But here arises a difficulty of the same kind as that explained in VELOCITY. The preceding ratio of two to one is that of the whole effects of curvature from A to B, and from *a* to *b*. If the change of direction were uniform, that is, if every tenth (or other) part of AB gave a tenth (or other) part of the change of direction, it would then be indifferent whether we chose an inch for AB and *ab*, or any other length. But if the curvature vary unequally, the comparison of the united effects of all the curvatures from A to B, and from *a* to *b*, does not give a proper ratio of the comparative curvatures at A and *a*. The only curve in which this is the case is the circle, which is the curve of uniform curvature, just as the straight line is the line of uniform direction. But we immediately perceive that if AB and *ab* had each been the hundredth part of an inch instead of an inch, this objection would have held in a less degree; if the thousandth part of an inch, still less, and so on. Hence, as in VELOCITY, it is not by the proportion of the angles BVT and *bvt* that we get an exact and unalterable notion of what is taking place at A and *a*, but by the limit to which that proportion approaches, as B and *b* move back towards A and *a*, and the angles in question diminish without limit. This is the accurate terminal notion on which the mathematical theory of curvature is founded.

If the two curves had been circles (or curves of uniform curvature) it is found that the limit of the proportion of these angles (or the proportion of the angles themselves, which for circles is the same as its limit) is inversely as the radii of the circles; that is, doubling the radius of a circle halves its curvature, and so on. This suggests an absolute measure of the curvature at A. Let the second curve be a circle, so taken that BVT and *bvt* shall have a limiting proportion of 1 to 1, or shall continually approximate to equality (EQUALITY, APPROACH TO). The circle *ab* has then at *a* the same curvature as the curve at A, and its radius (called the radius of curvature) being determined, the degree of curvature at A is known, as compared with that of any point of any other curve whose radius of curvature is known. This radius of curvature is thus determined: Draw the perpendicular BK and the chord AB. Then if the chord AB be always represented by the fraction c of an inch, and BK by k of an inch, the limit towards which $c \times c \div k$ approaches, as B is made to approach towards A, is the diameter of the circle of the curvature, or double of its radius. Or if through A and B a circle be always conceived to pass, which touches both AV and VB at A and B, the limiting position of that circle is the circle of curvature.

If the curve be referred to rectangular coordinates, and if x and y be those of the point A, $y=\phi x$ the equation of the curve, and ϕ' and ϕ'' the first and second differential coefficients of ϕx, then

$$\text{Radius of curvature at A is } \frac{(1+\phi'^2)^{\frac{3}{2}}}{\phi''}$$

If ϕ be the angle made by the tangent with the axis of x, and s the arc from any given point to A.

$$\text{Rad. of Curv. at A is } \frac{ds}{d\phi}$$

On this subject see INVOLUTE, EVOLUTE.

When the curve is not a plane curve, imagine it orthographically projected upon a plane. Its change of direction is then partly parallel to the plane, partly perpendicular to it, and the curve is said to have *double* curvature. But as this subject, together with that of the curvature of surfaces, is not of an elementary character, we shall not proceed further here, but refer to SURFACES, and to all works which treat largely of the Differential Calculus.

The circle of curvature is also the circle of contact, or the nearest circle which can be drawn to the curve, just as the straight line of direction is also the line of contact, or the tangent. An infinite number of circles can be made to present the appearance of touching the curve at A, [CONTACT] of all of which the circle of curvature comes the closest. Moreover, it always cuts the curve which it also touches (in the mathematical sense), except only at particular points. That is to say, the circle of curvature has in general a contact of the second order with its curve, in which case the circle always passes through the curve. But if at any particular point the contact should be of a higher and odd order, the circle of curvature does not pass through the curve.

CURVE, and CURVES, THEORY OF. A curve is a line which has *curvature*. Though the second of these terms be derived from the first, yet it is the notion explained in the preceding article which is preliminary to the explanation of the general term *curve*. Let a point move with a perfectly gradual change of direction, and it describes a curve.

Curves are said to be of the same species, in which the motion of the describing point is regulated by the same mathematical law. Thus the general law of the circle is, that all its points are equidistant from a given point. This law is the characteristic of the species; one circle is distinguished from another by the length of the constant distance supposed in the law of formation.

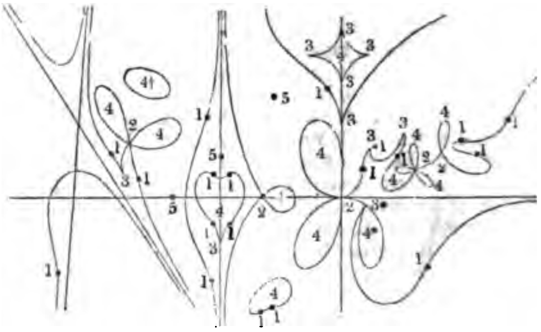
And in like manner as 0, or nothing, is classed under the general name of number or quantity, so the straight line itself (or the line without curvature) is, in algebra, spoken of under the general term *curve*. Or, in the last-mentioned science, the word means any line which is described by a point moving under one and the same law through every part of space which is consistent with the law.

The connexion of algebra with the doctrine of curves depends upon the method of coordinates (ABSCISSA, ORDINATE, COORDINATES), by means of which every algebraical function whatsoever is connected with the properties of a curve. This is the point of greatest utility in the theory, namely, the power which it gives of representing to the eye all the varieties of magnitude which an algebraical function undergoes, while one of its letters passes through every state of numerical magnitude.

The number of curves which have received distinct names, out of the infinite number which may be drawn, is very small; we subjoin the names of those which are of most usual occurrence, referring to the several articles for further information.

1. Circle
2. Ellipse
3. Hyperbola
4. Parabola
5. Semi-cubical Parabola
6. Cissoid of Diocles
7. Conchoid of Nicomedes
8. Trisectrix
9. Lemniscata
10. Cycloid
11. Companion of the Cycloid
12. Harmonic Curve
13. Trochoid } Trochoidal Curves.
14. Epicycloid and Cardioide } Trochoidal Curves.
15. Hypocycloid } Trochoidal Curves.
16. Epitrochoid } Trochoidal Curves.
17. Hypotrochoid } Trochoidal Curves.
18. Curve of sines, cosines, tangents, &c. [SINES, TANGENTS, &c., CURVES OF.]
19. Exponential or Logarithmic Curve
20. Spiral of Archimedes
21. Logarithmic Spiral or Equiangular Spiral
22. Reciprocal Spiral
23. Lituus
24. Quadratrix of Dinostratus
25. ——— of Tchirnhausen
26. Catenary
27. Tractory
28. Syntractory
29. Tractrix
30. Ovals of Cassini
31. Watts's Parallel motion curve

The general characteristics of curves are extremely varied, and very few of them have received names. We subjoin a diagram, which will show all the varieties of figure most commonly considered in works on the Differential Calculus, premising however that we do not actually know any curve which contains them all. It would appear as if our figure contained several curves, but it must be remembered that in the algebraical sense many curves exist with branches completely unconnected, but all described under one law.



The several parts of the preceding are of continual occurrence; the following are the names and references:

(1). Points of inflexion or contrary flexure (FLEXURE, CONTRARY).

(2). MULTIPLE POINTS, double, triple, &c. according to the number of times the curve passes through them.

(3). CUSPS: the terms are hardly sufficiently well settled to enable us to say whether the 3* is to be considered a double point, a triple point, or not a multiple point at all.

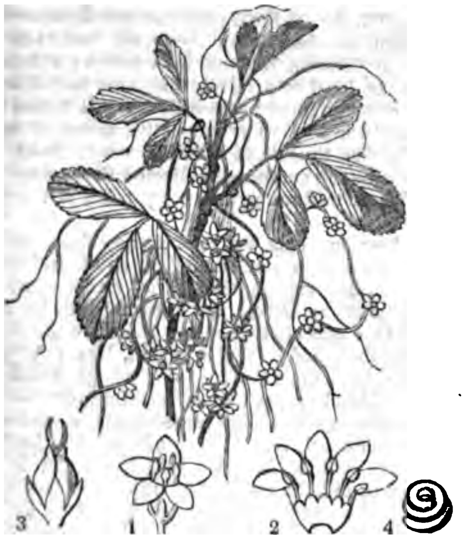
(4). It is customary to call any part of the curve which encloses space an OVAL, though, according to the common meaning of the term, there is no oval in our diagram except 4†. Of 4* we hardly know whether it would be called an oval or not.

(5). Conjugate points [CONJUGATE]; when of a general law of description which gives ovals, a particular case is taken in which an oval disappears, it generally leaves behind it, so to speak, a single point which is included under the equation to the curve, but has no contiguous points. We should propose to call these points *evanescent ovals*, and shall give some instances in the article OVAL. [INVOLUTE, EVOLUTE, CAUSTIC, CONTACT, TANGENT, ARC, AREA, ASYMPTOTE, MAXIMA and MINIMA, &c.]

CU'RZOLA, or CORZOLA (formerly Corcyra, Strabo, p. 315), an island in the Adriatic, comprised in the circle of Ragusa and in the Austrian kingdom of Dalmatia. The channel of Curzola separates it from the peninsula of Sabioncello. Including the adjacent islets of Agosta and Torcola, the area is about 231 square miles. Curzola contains one town, a market-town, and about 6500 inhabitants. The surface is chiefly occupied by woods and forests, which furnish good ship-timber; the vineyards annually yield about 80,000 hogsheads of wine, and the fisheries on the coast are productive; but little grain is raised, and the fresh water is scarcely usable. Curzola, the chief town, is situated on a neck of land upon the channel (here called canal), in 42° 57′ N. lat. and 16° 50′ E. long.; it is surrounded by walls, and has a cathedral, two monasteries, about 800 houses, and 1800 inhabitants. It is the seat of a bishopric, builds vessels, and traffics with the produce of the island.

CUSCUTA'CEÆ, a small natural order of monopetalous exogens, cut off from Convolvulaceæ because of their imbricate corolla, which does not fall off after flowering, their seeds with a spiral acotyledonous embryo, and their leafless parasitical habit. Cuscuta, or Dodder, is a genus met with in most temperate climates, the species fixing themselves on the branches of woody or other plants, twisting round them, striking a number of minute suckers down upon their bark, and thus attracting from the system of the plants and from the air, the sustenance necessary to their own support. Hence they are true parasites although they do not actually, like miseltoe, plunge their roots into the wood and incorporate themselves with the tissue.

Common Dodder, Cuscuta europæa, is a white or reddish-looking annual, which flings its thread-shaped arms like a cluster of living threads round the branches of heath, furze,



[Cuscuta minor, twining round Lucerne.]

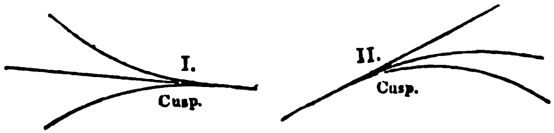
erfect flower; 2, a corolla cut open; 3, an ovary with its calyx; 4, the

›n commons and dry wastes. It has no leaves, except ›cales that stand in their room; and it bears small rs of white bell-shaped blossoms, each of which has cales at the base of its tube. The fruit is a little ıranous capsule, opening transversely like a soap-box, ropping four seeds upon the soil. There is a common lice that these seeds actually strike root into the ; but that this is a popular error is sufficiently shown › following observations translated from De Candolle: seed of Dodder differs from that of other Convol- ›es by the absence of cotyledons, as the Dodder itself from them by the absence of leaves; the latter are entirely absent, or are reduced to almost imper- le scales. The germination of the Dodder is effected, hat of plants in general, in the earth, and without ing the presence of other vegetables. The embryo, ed of its cotyledons, is nourished, in its first develop- at the expense of the central albumen which it en- s. The slender and simple radicle descends into the and the plumule, equally simple and cylindrical, rises thread: if it finds no other living plant near it, it if it finds one, it surrounds the stem, and from the of contact proceed hollow tubercles or suckers which themselves in the bark, and suck the juice which ›en elaborated by the plant attacked; then the root es obliterated and dies, and the plant lives from that orward by its suckers only. Whilst it was not a pa- it rose vertically; as soon as it became one, it was no tempted to direct itself either vertically, or towards ht. Its shoots dart from one plant to the other, and re conveyed to new victims when the old ones are sted. Often the seeds germinate before they quit the es, and the new plant immediately becomes a para- his is particularly observed in the Cuscuta monogyna, attacks the vines in Languedoc.

›e Dodders, called by the French cultivators teigne, perruque, &c., are very dangerous to the fields of ıinous plants which they attack, and upon which they ›ly themselves with singular rapidity. They destroy ants either by depriving them of their nourishment, strangling them in their folds. It is difficult ›rd against them on account of the rapidity of their ıtion, the facility with which they pass from one to another, the abundance of their seeds, and the power which they possess of germinating either earth or in the capsule. M. Vaucher cleared his ial fields from dodder pretty well by perpetually break- ad dividing their stalks with a rake. The means appears to me really efficacious are immediately to all the portions of artificial meadow where Dodder ›en seen to develope itself, and to do it before it can produced seed. If it appear in fields of flax, the attacked must be cut down, or rooted up; and if it r among vines, the branches must be cut before the s matured. If these precautions have been neglected, and a portion of the land should be infested with these seeds, the crop which has been attacked must be replaced by crops of corn or of grasses. Thus time is given to the seeds of Dodder which have been concealed in the soil, to develope themselves, when they may perish without doing any harm, since the soil finds itself covered with plants which cannot nourish them. As to the seeds of leguminous plants which may be infested by a mixture with those of the Dodder, the best means to get rid of them is to sift them in a tolerably fine sieve, so that the seeds of the Dodder, which are very small, may pass through, leaving those of the trefoil or of the lucerne. In this operation the seed must be shaken rather violently, so as to break the capsules of the Dodder, and to force their seeds out.'

CUSP (Cuspis, a pointed end), a mathematical term used where two branches of the same or different curves appear to end in a point. Thus, in an eclipse of the sun, the borders of the sun and moon make two cusps at their point of intersection.

In the theory of curves, the cusps which appear are always such that the two branches have a common tangent at the cusp, and they are distinguished into the cases in which the tangent lies between the branches or on one side of both.



In the actual determination of the position of cusps by means of ordinates to a given axis, there are two distinct ways of proceeding.

1. For cusps whose tangent is perpendicular to the given axis.

2. For cusps whose tangent is not perpendicular to the axis.

The first case ought in part to fall under the theory of maxima and minima; ϕx being the ordinate, it is the case where $\phi' x$, the differential coefficient, becomes infinite and changes sign; or becomes infinite and afterwards impossible, having previously had two values of the same sign for each value of x. These cases give cusps of the first and second kinds, as shown in the two diagrams.

All other cusps (namely, those whose tangents are oblique or parallel to the axis) are found by observing the points at which $\phi'' x$, the second differential coefficient, takes the form A, having previously had that of $A \pm B$; that is, in $\phi'' x$, the points must be found at which a term of double value vanishes and then becomes impossible. If for points immediately preceding, the $A+B$ and $A-B$ were of different signs, the cusp is of the first species: if of the same sign, of the second species. It would be useless to attempt separation of the theory of cusps from the general theory of curves, further than is contained by the preceding rules.

CUSP, a term given by Sir James Hall, in his 'Essay on the Origin of Gothic Architecture,' and now commonly applied to the points terminating the internal curves of the trefoiled, cinquefoiled, &c. heads of pointed arch windows.

CUSSET, a town in France, in the department of Allier, on the little river Sichon (which flows into the Allier on its right or east bank), and close to Vichy, on the Allier, a town much frequented on account of its mineral waters. Cusset is about 215 miles from Paris by the road through Fontainebleau, Montargis, Nevers, and Moulins, in 46° 8′ N. lat., and 3° 27′ E. long.

This town owes its origin to a Benedictine nunnery, established here during the reign of Charles le Gros, A. D. 886, by Emmène, bishop of Nevers, and raised to the rank of an abbey, A. D. 1236, by Hugues, bishop of Clermont, who established at Cusset, the same year, a collegiate church. There was also, before the Revolution, a convent of Capuchin monks just out of the town. Cusset is surrounded with walls, and is in a country fertile in wine, fruit, excellent hemp, and especially in all kinds of grain. There is a coal-pit near the town. The inhabitants in 1832 were 3740 for the town, or 4910 for the whole commune. There is a large paper-mill, in which 100 workmen are employed.

CUSTARD APPLE, a name given in the West Indies to the fruit of Anona reticulata. [ANONACEÆ.]

CUSTOM-HOUSE, the building in which the business is conducted of collecting that part of the public revenue which is derived from duties charged upon the importation or exportation of merchandise. In common parlance, the term custom-house has a more extensive signification, and is understood to embrace the establishment by means of which that branch of the public revenue is collected and its regulations are enforced.

CUSTOMS, or USAGES, in law (consuetudines), are either general or local. The first kind consists of those usages which having prevailed throughout England from time immemorial, but, without their original institution having been handed down to us in records or writing, have been recognized by judicial decision*, and form that common law, or lex non scripta, which is the chief foundation of English jurisprudence. To like immemorial usage is to be ascribed the existence of such parts of the civil and canon laws, as from the earliest times have formed the rule in the king's ecclesiastical, military, and admiralty tribunals, and also in the courts of the two English universities. These laws of foreign origin subsist however only as inferior branches of the customary law, subject to the superintendence and control of their proceedings by the superior temporal courts, and to a strict observance of the rules of construction assigned by these last to the statute law.

These general customs of the realm, which form the common law, properly so called, alone warrant the existence and jurisdiction of the king's superior courts; and can only be drawn into question there. These general customs, as originally methodized by the Saxon kings, and in some cases modified in the early Norman reigns, supplied those fundamental rules by which, in cases not provided for by express enactment, the course of inheritances, the interpretation of acts of parliament, and most of the remedies for civil and criminal injuries are regulated. Numerous axioms essential to the administration of common justice have no other binding force than antient and uninterrupted usage, which has obtained the force of law by the recognition of the courts. [COMMON LAW.]

Among these general customs must be enumerated those laws which govern the particular bodies of men to which they relate; merchants, innkeepers, carriers, owners of lands adjoining the sea coast, &c. &c., as well as the inhabitants of particular counties or boroughs, in the particular instances of gavelkind and Borough English. That custom called the law of the road, by which riders and drivers are expected to keep the left hand, as well as that respecting servants hired at yearly wages, by which either master or servant may determine the contract at a month's warning, or on paying a month's wages, have been recognized by the courts from time to time as parts of the common law. These, like the rest, originated in general convenience, and being gradually drawn more into notice by frequent recurrence, have been finally sanctioned by judicial authority. For immemorial customs may be extended to things and circumstances which arise at the present times. Thus a custom from time immemorial that all officers of a court of justice shall be exempt from serving other offices includes offices created within the time of legal memory, but cannot be enlarged beyond the extent to which the use has been carried; for that, and not the reason of the thing, determines the courts in declaring what the law is in such cases.

The customs by which the king's superior courts of Westminster Hall regulate their administration of justice, are popularly termed their practice. These rules are founded on antient usage, and, in respect of their universality, form a part of the common law without its being necessary to allege custom or prescription to warrant them.

Where a custom is already part of the common law, the superior courts will take judicial notice of its existence as such, without requiring it to be stated in the written pleadings. Thus each of these tribunals will take judicial notice of its own customs or practice as well as of that of the rest; whereas the practice of inferior courts, as well as particular or local customs, extending to certain persons or districts only, being therefore different from and contrary to the common law, must, with the exception of gavelkind and Borough English, be set forth with due precision.

This, though an observation apparently technical only, forms in its application the test by which we distinguish general from the local or particular customs just described. These latter customs must necessarily have had their origin in the peculiar wants of their respective districts, and are the remains of that multitude of similar usages from which Alfred and his Saxon successors collected those laws which may be considered as forming the common law of the nation at the time.

Many of these customs, for reasons now forgotten, were permitted to remain in some counties, cities, and manors, &c., in their former vigour, though at variance with the laws of the rest of the nation, and are confirmed by Magna Charta and other acts of parliament. Such are the customs of gavelkind (abolished in Wales by stat. Henry VIII.), by which all the sons inherit alike, of Borough English, by which lands held in burgage tenure descend to the youngest, instead of the eldest son; and of some boroughs, that widows shall have dower of all, instead of a third of their husband's lands. A more striking instance is that custom in many cities and towns to hold courts for trial of causes without royal grant. The particular customs of manors as to descent, &c., are also of this kind, and bind the copyhold and customary tenants. The existence of every such local custom, with the exceptions above noticed, as well as its application in each particular case, must be alleged in the pleadings, and proved, like any other fact, before a jury: sometimes they are open to evidence without being pleaded. Under no circumstances can these questions be entertained by an ecclesiastical court without the consent of the party impugning the custom.

Such customs of London as do not concern the property of the corporate body itself are proved by a peculiar mode, that of a certificate to the superior courts of law from the lord mayor and aldermen, conveyed by the mouth of their recorder in a solemn ceremonial; without this certificate these courts will not take judicial notice of them.

A particular custom to be valid must have been used 'from time whereof the memory of man runneth not to the contrary.' This is 'prescription,' or 'title by prescription;' and more accurately describes what is commonly called 'time immemorial,' which means, says Littleton, 'that no living witness hath heard any proof or had any knowledge to the contrary,' and as lord Coke adds, 'that there is no proof by record or writing or otherwise to the contrary.' It has been doubted whether a prescription (in its proper sense) and a custom can coexist. There is some curious learning on this point collected in the arguments and judgment in Blewett *v.* Tregoning, 3 Ad. and Ellis. It was held that a custom in a particular market that every pound of butter sold in it should weigh 18 oz. was bad, being directly contrary to a statute of Charles II., which enacted that every pound avoirdupois throughout the kingdom should weigh 16 oz. only. The right to a particular custom must have been continued within time of memory peaceably and without lawful interruption, and will not be lost by mere disuse for ten or twenty years; though in such case to establish it by proof becomes more difficult. But it cannot stand against an express act of parliament to the contrary, for that itself proves a time when the right to such a custom could not exist. It must also be so far reasonable, according to the standard warranted by authority of law, that though no particular origin can now be assigned for it, or though the state of things in which it is known to have arisen has been altered, no good legal reason can be given against its continuance. If it may have had a legal and reasonable origin, it shall be presumed that it actually had it: and its varying from the general law forms no objection, for that is the very essence of a particular custom; but if it be so contrary to any known rule or principle of law, or to the good of the public, or of a multitude of persons, that it cannot be presumed to have had a reasonable commencement in voluntary agreement for some beneficial object, as for securing possessions, promoting trade, or suppressing fraud, it will be void. Thus no length of usage would render good a custom of the secretary of state's office to issue warrants in general terms against the authors, printers, and publishers of a libel, without naming them; that course being contrary to clear and well-settled principles of law, which will not suffer a mere officer to decide on the individuals to be imprisoned. Again,

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* Bracton's definition of a custom is this—'Consuetudo vero quandoque pro lege observatur, in partibus ubi fuerit more utentium approbata, et vicem legis obtinet, longævi enim temporis usus et consuetudinis non est vilis authoritas.' Bracton, fol. ii., ed. Lond. 1569.) This is no inapt definition of a custom observed as if it were law, by those who find it convenient and reasonable; but we can hardly conclude from this passage that this excellent old writer clearly saw that custom could not be law till made so by the sovereign power, or those to whom the sovereign power has delegated parts of its authority.

a in an inferior court to try causes by six jurors was
l, as contrary to the common law, though saved in
a some instances by a statute of Henry VIII., con-
such custom where it then existed. But long
d acquiescence in one uniform payment, or in ex-
persons particularly situated from contributing to
gent evidence that it is reasonable; for as Lord
d once said, it cannot be presumed that during a
iod of years one half the parties were knaves in
lly receiving that to which they were not entitled,
other fools for submitting to an unjust demand.
s to the judges of the courts to decide on what is
le when brought judicially before them.

a custom is harmless in itself, and affords recrea-
number of persons, though to the temporary in-
nce of an individual, it will be upheld and referred
l origin. Thus a custom for the inhabitants of a
play at cricket, or dance on private property in the
as held good, as the lord might have annexed this
to his original grant of the land. A custom must
certain as to the description of parties benefited,
pulsory, without its depending on the caprice of
l person whether it can be acted on or not. It
o be consistent; for repugnancy to any other
tom would be plainly contrary to that origin in
consent on which alone it stands: and lastly, it
strictly pursued, being derogatory of the common

custom varies from prescription in this: the former
d in legal forms as existing not in any person
ut within a certain named district, without showing
cause or consideration for it; whereas prescription
ve a presumed legal origin, and is either a per-
ht, always claimed in the name of a person certain
ancestors, or those whose estate he has, or by a
itic and their predecessors; or else is in a *que* estate;
ight attached to the ownership of a particular
d only exercisable by those who are seised of it.
oms of cities, towns, and boroughs, by which per-
freemen were prevented from keeping shops or
des or handicrafts within them, were abolished by
lliam IV., cap. 76, sec. 14. [PRESCRIPTION.]

s of traders, or seamen, as also of agriculture,
&c., will be followed in the construction of con-
less they are inconsistent with their express terms,
ject to that condition, they are admissible even to
cidents to them as to which they are silent. The
of the country' means the custom of all parts of
try to which it can in its nature be applied. Thus
that land accruing imperceptibly to the sea-shore
o the owners of the shore, applies to all such parts
alm as adjoin the sea, unless limited in terms to a
r district.

nmemoriality of a particular local custom may be
ly proved by living witnesses attesting regular
for twenty years, unless contradicted by contrary
Upon this doctrine will be found to depend a great
f public as well as private rights to antient offices,
treasure trove, wreck, nomination of juries, &c.;
s to tolls of markets, port duties, tithes, antient
e., and to exemptions from those burdens. The
l amount of instances in which the privilege
can be proved to have existed must be considerable
cording to the frequency or the rarity with which
be naturally expected to recur. Thus in a copyhold
f surrendering in fee so as to bar an entail, a sin-
nce of user, though incapable of making a custom, is
sufficient to support it, if not unreasonable in itself.
ated facts of user make a custom of trade; but the
nion of merchants is not sufficient for that purpose;
any course of action pursued under colour of a
of merchants alter a general rule of common law
tablished by judicial decisions.

g continued usage for exempting particular persons
cal burden, will, if necessary, be supported by pre-
that it originated in an act of parliament now lost,
no length of usage will countervail the terms of a
o the contrary.

OMS-DUTIES consist for the most part of taxes
on goods and produce brought for consumption
ign countries; such duties are sometimes collected
ports made to foreign countries, and upon goods
ace passing from one port to another of the same
country. Of this nature were the duties on coals, slate, and stone, carried coastwise from one port in the United Kingdom to another, which duties were repealed in 1831. With the exception of a small-rated export duty upon coals, hare-skins, rabbit-skins, and sheep's wool, and an *ad valorem* duty of one-half per cent. on the shipment to foreign countries of some articles of British production, the whole customs-revenue of this kingdom is now derived from duties charged upon the importation for consumption of foreign and colonial merchandise.

The earliest statute passed in this country, whereby the crown was authorized to levy customs-duties, was the 3rd of Edward I. The mode long employed in the collection of these duties was to affix a certain rate or value upon each kind or article of merchandise, and to grant what was called a *subsidy* upon these rates. This subsidy was generally one shilling of duty for every twenty shillings of value assigned in the book of rates. The early acts granting these duties speak of them as subsidies of tonnage and poundage. The word tonnage was applied to a specific duty charged on the importation of each tun of wine and the exportation of each tun of beer; and the word poundage was applied to other articles valued as already explained.

The first 'book of rates agreed upon by the House of Commons,' is believed to be that compiled by a committee in 1642, during the reign of Charles I., and published under the authority of the House by Lawrence Blaiklock. The next book of rates of which we have any record, was also published by order of the House of Commons in 1660, the year of the restoration of Charles II. In the fifteenth and twenty-second years of the reign of that king, the principle of poundage was altered as respected some articles, and upon those articles specific duties were charged instead, though the system was still followed with regard to the great bulk of articles. But in the reigns of William III. and Anne many additional specific rates were imposed, in place of the valuation for the subsidy This course of substitution was continued from time to time, and some other innovations were adopted by which the simplicity of the antient plan was destroyed; so that in a work of authority, published by Mr. Henry Saxby, of the Custom-House, London, in 1757, we find as many as thirty-nine principal branches of customs-duties, with subdivisions applying to different kinds of goods, thereby introducing a degree of complication into the subject which must have caused great embarrassment to traders.

The difficulties here mentioned were increased by the great number of acts of parliament passed from year to year for altering the duties or regulations of this branch of the revenue; and the great bulk and intricacy of the customs-laws had caused such inconvenience that about the year 1810 the lords of the Treasury employed Mr. Jickling to prepare a digest of those laws. Five years were employed in completing this task, and some idea may be formed of the laborious nature of the work, and of the necessity for its performance, from the fact that the digest forms a large octavo volume of 1375 pages. The work is intituled 'A Digest of the Laws of the Customs, comprising a Summary of the Statutes in force from the earliest period to the 53rd George III. inclusive.' The effect of the numerous fresh enactments to impair the usefulness of this exposition of the revenue laws was very soon apparent, and in 1823, Mr. Hume, the secretary of the Board of Trade, then comptroller of the Customs in the port of London, was appointed by the Treasury 'to undertake the preparation of a general law or set of laws for the consolidation of the Customs of the United Kingdom.' In the performance of this duty, Mr. Hume prepared 11 bills under the following heads:—

An Act	for the Management of the Customs,	6 George IV.,	cap.	106.
„	for the general Regulation of the Customs,	„	„	107.
„	for the Prevention of Smuggling, . .	„	„	108.
„	for the Encouragement of British Shipping and Navigation, ...	„	„	109.
„	for the Registering of British Vessels, .	„	„	110.
„	for granting Duties of Customs, . .	„	„	111.
„	for the Warehousing of Goods, . .	„	„	112.
„	to grant certain Bounties and Allowances of Customs, ...	„	„	113.
„	to regulate the Trade of the British Possessions abroad, ...	„	„	114.
„	for regulating the Trade of the Isle of Man,	„	„	115.
„	for regulating Vessels carrying Passengers to foreign Parts, ...	„	„	116.

These several acts received the royal assent in July, 1825, and were respectively brought into operation on the

1st January, 1826. In their effect they have rendered the greatest benefit to the commerce and the revenue of the country, by substituting simplicity for complexity, and certainty for the conflicting opinions and varying practice of those by whom the previous statutes were practically administered. The number of those statutes, many of which were obsolete, that were repealed by the first of these 11 acts, amounted to 443. Many subsequent acts affecting the customs-revenue have certainly been passed, but the whole customs-laws of this country now in force are contained in one moderately sized octavo volume, in which the subject appears cleared from all complexity.

The amount of customs-duties collected in the United Kingdom during each of the last ten years has been as follows:—

1827	£21,009,052	1832	£19,684,574
1828	20,608,710	1833	18,575,182
1829	20,571,837	1834	21,118,920
1830	21,084,524	1835	22,990,877
1831	19,645,939	1836	23,796,622

The great bulk of this revenue is collected from a very small number of articles. Upon six of these, viz., spirits, sugar, tea, timber, tobacco, and wine, the amount collected in 1836 exceeded 19 millions, and 22 out of 23¾ millions in the same year was afforded by 17 articles, the least important of which furnished 102,108*l.* to the revenue. The eleven articles which, with the six already enumerated, make up the 22 millions of duty, are butter, cheese, coffee, currants, raisins, molasses, seeds, silk manufactures, tallow, cotton, and sheep's wool. The remaining amount, less than two millions, is levied upon a long list comprising several hundred articles of merchandise, as to a large proportion of which the disadvantage to the foreign trade of the country must be out of all proportion greater than the benefit yielded to the revenue.

CÜSTRIN, one of the eighteen circles into which the government of Frankfort, in the Prussian province of Brandenburg, is divided. Its area is about 294 square miles, and it contains about 40,800 inhabitants; an increase of 11,900 since the year 1817. It lies on each side of the Oder, into which the Warthe flows at Cüstrin. The western parts are wholly composed of marsh land and swamps, and contain the 'Oderbruck,' or swamp of the Oder: the eastern parts are at a greater elevation, and are well wooded. The principal employment of the inhabitants is cattle-breeding; the circle, however, grows corn enough for its consumption, besides flax, hops, and tobacco.

CÜSTRIN, the capital of the circle, in 52° 35′ N. lat. and 14° 40′ E. long., is a strong fortress placed at the confluence of the Warthe with the Oder, and encompassed on all sides by marshes and water. The first fortifications were constructed by John, Margrave of Brandenburg, in 1568: it fell into the hands of the Swedes in 1631. All but three houses were destroyed in a bombardment by the Russians, of eight days only, in August, 1758; it surrendered unconditionally to the French, November 1, 1806, and was given up by them, March 1, 1814. The town itself and its fortifications are of small extent; but without them it comprises the new town, the intrenchments on the left bank of the Oder, which is connected with the new town by a wooden bridge 875 feet long, and a long suburb running along the right bank of the Oder, as well as two smaller suburbs. Cüstrin has two Protestant churches, a gymnasium, hospital, and bridewell; about 600 houses, and 5600 inhabitants. The manufactures consist of woollens, stockings, starch, brandy, and beer. Much grain and cattle are sold, but the vicinity of Frankfort renders its external trade comparatively insignificant.

CUTCH, a principality lying between 22° and 25° N. lat. and between 68° and 72° E. long. It is bounded on the north by the Great Sandy Desert, on the east and the south by the Gulf of Cutch, and on the west by the Koree or eastern outlet of the Indus. The country is naturally divided into two portions, of which that towards the south is an irregular hilly tract; the northern part, called *The Runn*, is an extensive salt morass, 160 miles long from east to west, and varying in breadth from 4 to 60 miles. During the rainy season the Runn is completely covered with water, and the country to the south is quite insulated. During the dry monsoon the waters retire, and the Runn assumes a diversified appearance. In some parts it is still an impassable salt swamp; in other parts there are great banks of dry unproductive sand, covered occasionally with saline incrustations, while other parts afford tolerable pasture. During the rainy season, the Runn can be traversed with difficulty, and only in certain parts, by horsemen.

The soil of the habitable part of the country is for the most part clay, covered with about five inches of deep sand. Towards the east the soil is loamy, and near the hills the surface is covered with volcanic matter, and abounds with specimens of metallic scoria. A range of hills, named the Lakhi, running east and west through the centre of this part of Cutch, divides it into two nearly equal portions. These hills are one continuous mass of rock, destitute of soil and of water, except during the rainy season, when the water forms channels for itself, through which it rushes to the plain on each side. A high bank of sand extends along the shore the whole distance from the Indus to the Gulf of Cutch. But little wood is found in the principality. A few common trees have been planted about the villages, and among them are date-trees, which yield fruit of good quality. The cultivation of cotton is carried on extensively, and the produce exported in return for grain, of which a sufficiency is not grown for consumption, and which is procured from Gujerat and Sinde. Iron ore occurs generally throughout the country, and in most parts coal is found in abundance. Great expectations were at one time formed as to the advantages to be derived from the coal, but the quality has not proved such as to encourage the expense of creating mining establishments. A mine situated about three miles from Bhooj was worked experimentally by order of the Bombay government in 1826, but was soon abandoned. The coal that was worked lay in two seams, each seven inches thick, and about twelve inches apart. Another mine was opened in 1828 at Seesaghud, about 19 miles from Mandavee, where also there were found two veins, the upper one only a few inches in thickness, and the other 13 inches thick.

The horses of Cutch are much esteemed; the oxen are of a very inferior description. Goats and sheep are very numerous. The wool of the latter is of long staple but coarse, answering well for the manufacture of blankets and carpeting: the weight of the fleece averages from four and a half to five pounds. Coarse woollen cloths are made and used by the inhabitants. Towards the north, and near the Runn, wild asses are very numerous, and are met with in herds of sixty or seventy together. This animal is larger and stronger than the tame ass. It is fierce and untameable in its nature, and when unable to procure pasturage in the desert lands, advances into the inclosed country, and does much damage to the grain crops: the flesh is said to be good eating.

The principal towns of Cutch are, Anjar [ANJAR], Bhooj, the modern capital, Luckput Bunder, Mandavee, Rohur, and Tahrah. Bhooj was founded about 200 years ago by Rao Bharra: it stands on the south-west side of a hill, in 23° 18′ N. lat. and 69° 50′ E. long. The fortifications are extensive, but being badly planned afford little protection to the place. The town has a handsome appearance from a distance; it contains several mosques and pagodas of white masonry, interspersed with plantations of date-trees, but on a nearer approach there are found to be a large proportion of mean dwellings. The palace of the rao is a large and well-built structure, covered with a kind of white enamel, which gives it a very handsome appearance. The population amounted, in 1818, to 20,000, among whom were many ingenious goldsmiths and jewellers. Luckput Bunder, formerly called Bustabunder, but which obtained its present name in 1793, when the fort of Luckput was built, stands near the east side of the Koree, in 23° 47′ N. lat., and 68° 56′ E. long., 75 miles north-west from Bhooj. The town is built on the brow of a hill, which rises from a swampy plain; it contains only about 2000 inhabitants, and is principally important as being on the high road from Bhooj and Mandavee into Sinde. Previous to the great earthquake of 1819, the communication from this town to the head of the æstuary of the Korée was by means of a small shallow creek, navigable only by small boats, but the effect of this convulsion was to deepen the water to eighteen feet, and effectually to open the navigation; it is however not a place of much trade.

Mandavee, the principal sea-port of Cutch, is situated on the shore of the Indian Ocean on the north side of the entrance to the Gulf of Cutch, in 22° 51′ N. lat., and 69° 34′

E. long. Mandavee is the most populous place in the principality, and contains 50,000 inhabitants, who are principally Bhattias, Banyans, and Brahmins: there are but few Mohammedans. The port is an open roadstead with a creek; there are 250 vessels belonging to the place, by means of which a very considerable trade is carried on with Zanguebar and the whole east coast of Africa, with the Red Sea and Arabia, with the Persian Gulf, Mekran, and Sinde, and with India as far as Ceylon. The vessels employed in this traffic vary from 25 to 200 tons burthen; they carry a large lateen sail, and have two masts, but are never decked; they are navigated by native pilots, who have acquired the use of the quadrant, and steer by charts. The natives assert that the foreign trade of Mandavee has existed for a very long period, but it appears that the nautical skill of their mariners received great improvement from the instructions of a native Rajpoot named Ram-Sing, who was carried to Holland about a century ago, and after a residence in Europe of some years' duration, returned home 'with a knowledge of astronomy, navigation, ship-building, and other arts, which have been ever since preserved.' The most valuable branch of the trade of Mandavee is that carried on with the eastern coast of Africa, a distance of 3000 miles, whence the merchants of Cutch procure ivory, rhinoceros hides, and other valuable articles. The principal article of export is cotton. Rohur, also a seaport, is situated in the Gulf of Cutch opposite to Wumania on the Gujerat peninsula, and is in 23° 2′ N. lat., and 70° 21′ E. long., about twelve miles from Anjar: the depth of water in this part of the gulf does not admit the passage of any but small vessels. The chief trade of Rohur is carried on with Gujerat. Tahrah, a populous place, inhabited principally by Hindus, is a fortified town about thirty miles south-east from Luckput Bunder, on the road between that place and Mandavee.

The population of Cutch is estimated to amount to 400,000 souls, about one-half of whom are Mohammedans, and the greater part of the remaining half Hindus. The Jharejah tribe of Rajpoots, who were estimated in 1818 to amount to 12,000, are believers in the Koran, and at the same time adhere to many Hindu observances. This tribe, the chief of which is the Rao or sovereign prince of Cutch, is remarkable for the almost universal practice of female infanticide, a practice which the English government has vainly endeavoured to suppress. Captain Macmurdo, the political resident at Bhooj, expressed his opinion that the total number of females belonging by birth to the Jharejah tribe who were alive in 1818 did not exceed thirty. The morals of the tribe are in other respects said to be very degraded; they are ignorant, indolent, and almost universally addicted to the immoderate use of intoxicating liquors: their wives are all necessarily procured from among other tribes.

Engagements of amity were entered into between the British and the government of Cutch in 1809, ostensibly with a view to the suppression of piracy, but really for the exclusion of foreign Europeans from the country, a precautionary measure adopted in anticipation of a threatened invasion of India by the French. In 1815, in consequence of depredations committed by the subjects of Cutch on the territory of the Guicowar, our ally, an English force was sent into Cutch, the Rao was deposed, and a new chief placed upon the throne, who engaged to receive a subsidiary force; but the Rao whom the English installed having thrown the country into disorder by misgovernment, he was in turn deposed likewise in October, 1819, and his infant son, Mirza Rao Sree Dessuljee, set up in his stead, under a council of regency, of which the British resident was a member: this in effect placed the government of the country in the hands of the English. In 1822 a further treaty was made, restoring Anjar, which place had been ceded to the English in 1816. In return for this the government of Cutch agreed to pay 88,000 rupees per annum, in addition to an annual subsidy of two lacs of rupees previously payable. It was calculated that these sums, which together amounted to 28,800*l.*, would have absorbed about one-fourth part of the revenues of the state, but it was found in practice that they greatly exceeded one-half the net revenue, and repeated remissions of a considerable portion have been found necessary. In the political letter addressed by the Court of Directors to the Bombay government on 26th May, 1830, some of the evils are pointed out, which appear to be almost unavoidable under the system of interference adopted by the Anglo-Indian governments. 'You have been led,' say the Directors, 'into a much more minute interference in the internal administration of Cutch than entered into your contemplation when you formed the present arrangement for the government of that country. This extension of your direct authority has taken place, as is usual in such cases, by insensible degrees, evils having been found to be produced by partial interference which it required a greater interference to remedy.'

(*Reports of Committees of House of Commons on the Affairs of India in* 1830 *and* 1832.)

CUTICLE, the external skin of a plant. It is composed of one or more layers of empty flattened cells, which adhere firmly to each other, and serve as a protection to the succulent tender tissue placed beneath them. The thickness of the sides of the cells renders them well adapted to repel mechanical violence, and the air cavities which it contains give the cuticle great efficiency as a slow conductor of caloric, enabling it on the one hand to prevent the escape too rapidly of the internal heat of a plant, and on the other to guard the tissue against scorching by the too powerful action of the sun. Accordingly we find the cuticle thickest and most completely organized where it is most exposed to the action of the air, while in submerged plants, which never are exposed to the atmosphere at all, it is absent. When plants inhabit damp shady places, it is thinner; when they grow on hot dry rocks, it is thicker than usual; and it is in all cases found to be affected in a similar manner. Once removed it is never renewed.

Sometimes it has openings through it into air-chambers placed below it, and such openings are guarded by a pair of oblong parallel cells, which, by their expansion and contraction, close or widen the orifice. These organs are called stomates, and are supposed to be more particularly intended to assist in the respiration of plants.

CUTTACK, a district in the province of Orissa, bounded on the east by the Bay of Bengal, on the north-east by the province of Bengal, on the west by various Maharatta states; and on the south-west by the Northern Circars. Its length from north-east to south-west is 180 miles, and its average breadth 110 miles. On the coast, and for twenty miles inland, the country is low and covered with wood, and being subject to inundation at spring-tides is very marshy. Beyond twenty miles from the sea the country rises considerably, and the soil is dry and fertile. At a further distance inland of twenty miles it swells into hills, and is well wooded; some of the trees are valuable for cabinet work, and others are used in dyeing. The forests are much infested by wild beasts. The region thus lying beyond the marshy delta is called the Mogulbundy. Beyond this is a third region, which is hilly, and extends westward as far as Gundwana. This region is parcelled among sixteen hereditary Zamindars, who are under the protection of the English, and are considered as tributary rajahs, paying at the rate of about one-tenth of the net produce of their estates. The country is subdivided under these Zamindars into a great number of estates, which are also held by hereditary succession. A great variety of minerals are found in this hilly country: iron is met with in many parts; and inferior garnets in great quantities.

Cuttack is watered by numerous streams, which, during the rainy season, become large rivers. The principal of these are the Mahanuddy and its numerous branches, the Bhaminee, the Byturnee, and the Subunreeka. The Bhaminee rises in the mountains of Gundwana, and flowing first to the south and then to the east, traverses the district of Cuttack; uniting with the Beroopah, a branch of the Mahanuddy, it joins the sea near Point Palmyras. The Byturnee rises among the mountains of Chuta Nagpore in Bahar, and flows south through Gangpore in Gundwana: on entering Cuttack it turns to the south-east, and afterwards to the east, and falls into the Bay of Bengal in 20° 48′ N. lat. The Subunreeka likewise rises in Chuta Nagpore, and flows in a south-easterly direction, with a very winding course, for 250 miles, and joins the Bay of Bengal, forming the southern boundary of the province of Bengal. These rivers abound with fish.

The rainy season does not begin so early as in Bengal, but continues from September to November with so much violence as to cause the different rivers to overflow their banks. In November the weather again becomes fine. From April to June the heat is very oppressive, and would be hardly supportable but for occasional thunder storms, accompanied by rain. At other times the climate is more temperate, but the thermometer seldom, if ever, sinks below 60°.

The manufacture of salt is carried on along nearly the whole of the coast; the produce is very white and pure, and yields a revenue of about eighteen lacs of rupees (180,000*l.*) per annum. The Mogulbundy produces rice and other grains, pulse, spices, dyeing stuffs, and sugar. Maize and wheat are the chief products in the hilly country farther inland. During the periodical rains, when the rivers are full, a good deal of teak and other timber is floated down to the coast. The forests in which this timber is cut are very unhealthy, and for that reason can be visited only at certain seasons of the year.

The principal towns of the district are Cuttack, Balasore, and Juggernauth. [CUTTACK, BALASORE, JUGGERNAUTH.] The other towns, or rather large villages, deserving of mention, are Buddruck, Soroli, and Piply. Buddruck is thirty-eight miles S.S.W. from Balasore, in 21° 7′ N. lat. and 86° 26′ E. long. It is this village and its neighbourhood that furnish most of the people who are known in Calcutta as Balasore bearers. Soroli is about twenty-three miles south-west from Balasore: it contains two fine tanks and the ruins of a mud fort. Piply is twenty-seven miles south from the town of Cuttack, in 20° 5′ N. lat. and 85° 58′ E. long. The district contains a great number of small villages. The whole population, including the inhabitants of the three principal towns, was estimated in 1822 at 1,296,365. The revenue consists of the profits of the salt monopoly already mentioned; the land assessment, amounting to fourteen lacs of rupees (140,000*l.*), nearly all of which sum is collected in the Mogulbundy; customs-duties, pilgrim tax, and other minor sources, about one lac in addition. Making allowance for the expenses of collection, the annual revenue derived from the district is about thirty lacs of rupees, or 300,000*l.* A great part of the circulating medium is composed of cowries, supplies of which are obtained every year from the Maldive Islands in return for grain. A considerable amount of bullion is carried into Cuttack by pilgrims, but this for the most part finds its way to Calcutta.

The district of Cuttack, including Balasore and other dependencies, was ceded to the East India Company, in full sovereignty, by the rajah of Berar, in January, 1804; the fort and town of Cuttack were taken by the English army in the month of October preceding. The salt monopoly was partially introduced soon after the acquisition of the territory, but was first legally recognized by the government in 1814. The measures at first pursued operated rather to restrict the supply than to subject the article to taxation, and much distress was thereby occasioned to the people without producing any adequate addition to the government revenues. This circumstance, combined with the too rapid introduction of a new revenue system, and the consequent sales of land for arrears of rent, whereby in the course of eleven years a transfer had been effected of more than one-half of the settled lands in the Mogulbundy from the original possessors, excited so much exasperation, that a very serious revolt was attempted in 1817, and this was not fully quelled until two years after, causing a considerable sacrifice of lives. After this insurrection was quelled, arrangements were made for supplying the district with salt by an extended system of local sales, at fixed prices, below those of the auction sales at Calcutta, and by this means a much larger quantity has been sold for consumption within the district, the revenue has been improved, and the people have been relieved from what was felt as a severe oppression.

(Rennell's *Memoir; Reports of Committee of Commons on the affairs of India*, 1832; *Revenue and Judicial Selections*, printed by the East India Company.)

CUTTACK, the capital of the district, is situated in 20° 27′ N. lat., and 86° 5′ E. long. The town is built on a tongue of land between two branches of the Mahanuddy river. During the rainy season Cuttack is completely insulated, and the town itself would be subject to periodical inundations but for large and solid embankments faced with cut stone, which effectually keep out the water. The necessity and at the same time the efficacy of these embankments were proved during the heavy rains of 1817, when the waters rose in one night eighteen feet. The river, during the rains, is a mile and a half broad, and from thirty to forty feet deep at this part, but during the dry season it is a narrow stream with a depth of only three feet.

The Sanscrit word Catak, from which the name of the town is derived, signifies a royal residence. While the province of Orissa preserved its independence, Cuttack was the residence of the Gajapati, or superior rajah, at whose court the military chiefs of Orissa performed feudal service. The Mogulbundy already described, formed the fisc or domain of the Gajapati, while the holdings of the military chiefs were situated round and along the frontier of the kingdom, and it was the duty of their possessors to defend the country from the irruptions of neighbouring powers in the same manner as the lords of the marches in Europe were in former days required to repel invaders.

The town contains a very well-built street with houses of stone two and three stories high, a large market-place, and several mosques; in one of these is exhibited a stone brought from Mecca, and bearing an impression of the foot of Mohammed. In 1822 the town contained altogether 6500 houses and 40,000 inhabitants. The fortress of Barabuttee, which was built in the fourteenth century, stands about a mile north-west from the town. Cuttack is 251 miles from Calcutta, 482 miles from Nagpore, 651 from Hyderabad, 779 from Madras, and 902 miles from Delhi, all travelling distances. (Rennell's *Memoirs; Col. Briggs on the Land Tax in India.*)

CUTTING, in gardening, is a portion of a plant from which a new individual is propagated when placed in the earth. Every body knows that a stick of willow stuck into the ground will put forth roots, and become a new plant; such an instance is a rude exemplification of the manner of multiplying plants by cuttings. In the empirical rules to be observed in this operation, the reader had better consult some book on gardening; we shall confine our observations to the theory of the operation.

Every bud which a plant contains is a distinct seat of life, capable, under fitting circumstances, of growing, flowering, fruiting, seeding, independently of all other buds, and able, if separated from the mother plant, to form a new individual. The buds of a vine, and of a potato, are actually so employed under the name of *eyes;* a cutting is merely a small collection of eyes adhering to a mass of woody matter.

A cutting, when prepared for planting, is cut off close to a bud at the bottom, and down to another at the upper end; it is then placed in earth quite up to its topmost bud, the remainder being buried. The object of this is three-fold: firstly, to expose only one bud to the stimulus of light, so that when the cutting begins to grow the leaves may not, from their number, require more food than the woody system can supply; secondly, to keep back the other eyes by the pressure of the earth upon them; and thirdly, to expose as great a surface of the cutting as possible to the influence of the moist earth and darkness, by means of which the production of roots will be facilitated.

In delicate operations, where cuttings are difficult to strike, several additional practices are had recourse to. The cuttings are covered with a bell glass, in order to keep the air that surrounds them saturated with moisture, so that when the buds begin to grow they may not exhaust the cutting of its vital fluid by their excessive evaporation. They are shaded with the same object in view; sun-light increases evaporation, and stimulates a growing part into action: the desire of the gardener is to guard against this, till his cuttings have formed abundant roots to feed by. When cuttings are very difficult to strike, their lower end is often made to rest upon the bottom of the garden-pot in which they are to grow; this removes their wounded end from too much moisture, and prevents their being gorged with crude sap before they are able to digest it, an evil quite as great as that of being exhausted by too rapid a digestion. The same or a similar purpose is answered by putting the cuttings in the first instance into pure silex (silver sand), from which they are removed as soon as roots are emitted; such sand permits only a slow transmission of water through it, and is in fact incapable of supersaturation if proper means are taken to drain it; and hence it renders it impossible that water should be conveyed too quickly into the open vessels of the cutting.

In many cases a single leaf, or a portion of one, is left attached to the upper eye of the cutting; this is for the sake of keeping up a slow circulation in the system, and of drawing into the vessels of the wood a gentle current of moisture, so that the cutting may never be too much exhausted.

n cuttings will not strike because they are too young,
ıse is to be sought in the young tissue being too ab-
, and taking up moisture faster than it can digest it,
ult of which is a repletion of the vessels, disease,
ath. On the other hand, cuttings the wood of which
ld will not strike from an opposite cause; their ves-
so small and rigid, that when the young leaves are
o expand, and the new roots to develop, the supply
moves too sluggishly through the cutting from point
, and hence the new parts wither if formed, or will
m at all. The exact age at which a cutting roots
eadily is a matter of experiment, and not capable of
educed to any theoretical rule.

highly probable that if these points are well consi-
all plants, of whatever nature, provided they have
med buds, are capable of striking from cuttings;
s notorious, that while some gardeners can only suc-
th the commonest things, others, by the success that
their operations, possess what would seem a magi-
er over plants, if we did not know that natural magic
in nothing more than the right application of right
dge at the right time.

TLE-FISH. [CEPHALOPODA, vol. vi., p. 425; SE-
]

IE'R, GEORGES, was born August 23, 1769, at
liard, now in the department of Doubs, but which
time was a county belonging to the dukes of Wür-
g. His father, a half-pay officer of a Swiss regi-
n the French service, had married late in life a
and accomplished woman, who took especial care
er's early education. He was sent to study first at
en, and he afterwards entered the Academia Caro-
en newly established at Stuttgard by Prince Charles
temberg for the purpose of training up young men for
and diplomatic offices. Cuvier, however, bestowed
his time on natural history; he collected specimens,
ew and coloured insects, birds, and plants during
rs of recreation. The limited circumstances of his
obliged him to remove from Stuttgard before he
d any public employment; and at twenty-one years
he accepted the situation of tutor to the only son
nt d'Hericy in Normandy. The family residence
ear the sea, the study of marine animals became a
Cuvier's occupation. He compared the living spe-
h the fossil remains found in the neighbourhood;
e dissection of a species of cuttle-fish led him to
he anatomy of the mollusca, and to reduce to order
herto neglected branch of zoology. While he was
mployed, a society was formed at Valmont, in his
urhood, for the encouragement of agriculture.
Teissier, a venerable and learned old man, the
of the articles on agriculture in the 'Encyclopédie
ique,' had taken refuge at Valmont from the revo-
disguising his obnoxious character of Abbé under
b and profession of a surgeon. At a meeting of the
iety he expressed his opinions on his favourite sub-
a manner which forcibly reminded young Cuvier of
icles which he had read in the Encyclopédie. At
of the sitting Cuvier addressed the stranger by the
f l'Abbé Teissier: the abbé was alarmed, but Cuvier
emoved his apprehensions, and an intimacy was
between them. When the reign of terror had
Teissier wrote to Jussieu and other friends at Paris
as of high commendation of his new acquaintance.
sult was, that Cuvier was requested to forward
f his papers to the Society of Natural History,
ortly after, in 1795, being then 26 years of age,
t to Paris, and in the same year was appointed
nt to Mertrud in the superintendence of the Jardin
ntes, which locality became from that time his home,
e scene of his labours and of his fame. Here he
the creation of that now splendid collection of com-
e anatomy, and in December of the same year he
his first course on that branch of science. In 1796
tional Institute was formed, and Cuvier was one of
t members. In 1798 he published his 'Tableau
taire de l'Histoire Naturelle des Animaux,' and after-
his 'Mémoire sur les Ossemens Fossiles des Quad-
s' and 'Mémoire sur les Ossemens Fossiles qui se
nt dans les Gypses de Montmartre.' He continued
trate the subject of fossil remains by subsequent me-
In the year 1800 he was named professor of natural
phy at the Collége de France, continuing at the same time his lectures on comparative anatomy at the Jardin des Plantes. In that year were published the first two volumes of his 'Leçons d'Anatomie Comparée,' which met with the greatest success. The three following volumes appeared in 1805. In 1802 the first consul Bonaparte appointed Cuvier one of the six inspectors-general for establishing lycea, or public schools, which were supported by government in thirty towns of France, and which are now called Royal Colleges. Cuvier established those of Marseilles, Nice, and Bordeaux. He was about the same time appointed perpetual secretary to the Institute for the Department of Natural Sciences, with a salary of 6000 francs. In 1803 he married the widow of M. Duvancel, a former fermier général: four children whom he had by this marriage all died before him. In 1808 he was commissioned by Napoleon to write a report on the progress of the natural sciences from the year 1789. The luminous and interesting treatise which he produced on this occasion was formally presented to Napoleon in the council of state. Cuvier declares the true object of science to be, 'to lead the mind of man towards its noble destination—a knowledge of truth—to spread sound and wholesome ideas among the lowest classes of the people, to draw human beings from the empire of prejudices and passions, to make reason the arbitrator and supreme guide of public opinion.' His next appointment was that of counsellor for life of the new Imperial University, in which capacity he had frequent personal intercourse with Napoleon. In 1809-10 he was charged with the organization of the new academies, the name designed to be given to the old universities of the Italian states which were annexed to the empire. He organized those of Piedmont, Genoa, and Tuscany. His reports of those missions exhibit the mild and enlightened spirit which he brought to the task. Speaking of the universities of Tuscany, he deprecates a too hasty and rash interference with institutions which had been founded and sustained by so many great men, and in which he found much to praise and to retain. In 1811 he was sent on a similar mission to Holland and the Hanseatic towns: his report especially concerning Holland is very interesting, as the subject of public instruction in that country is not generally known. He paid particular attention not only to the higher branches of education, but also to popular or elementary instruction; his principle was, that instruction would lead to civilization, and civilization to morality, and therefore that primary or elementary instruction should give to the people every means of fully exercising their industry without disgusting them with their condition; that secondary instruction, such as in the lycea, should expand the mind, without rendering it false or presumptuous; and that special or scientific instruction should give to France magistrates, physicians, advocates, generals, clergymen, professors, and other men of learning. His words were: 'Give schools before political rights; make citizens comprehend the duties that the state of society imposes on them; teach them what are political rights before you offer them for their enjoyment: then all amelioration will be made without causing a shock; then each new idea, thrown upon good ground, will have time to germinate, to grow, and to ripen, without convulsing the social body. Imitate nature, which, in the development of beings, acts by gradation, and gives time to every member to grow to perfection. The infant remains nine months in its mother's womb; man's physical perfection only takes place between twenty and thirty, and his moral completion from thirty to forty. Institutions must have ages to produce all their fruits; witness christianity, the effects of which are not yet accomplished, notwithstanding eighteen centuries of existence.' (Laurillard, *Eloge de M. le Baron Cuvier.*)

In 1813 Cuvier was sent to Rome, then annexed to the French empire, to organize the universities there. Although his being a Protestant rendered this mission the more delicate, yet his enlightened tolerance and benignity of manner gained him the general esteem and approbation in the capital of the Catholic world. Soon after Napoleon appointed him maître des requêtes to the council of state; and in 1814, just before his abdication, he named him councillor of state, an appointment which was confirmed by Louis XVIII., who soon after appointed him chancellor of the university, an office which he held till his death. In both these capacities he found himself at times in a very trying position, arising from the intolerance and bigotry of certain individuals of influence about court.

In 1817 he published a second edition of the 'Recherches sur les Ossemens Fossiles,' in 5 vols., 8vo., and also his 'Régne Animal,' in 4 vols., in which the whole subject-matter of zoology is arranged according to the principle of organization. It begins with man, of whom he recognizes only one genus and one species, diversified by varieties called races. In 1818 he made a journey to England, where he was received with appropriate honour. In the same year he was elected a member of the French Academy. In 1819 he was appointed president of the committee of the interior in the council of state, an office which, fortunately for him, was beyond the sphere of political intrigues, and only required order, impartiality, and an exact knowledge of the laws and principles of the administration. In the same year Louis XVIII., as a personal mark of his regard, created him a baron. He was appointed also temporary grand master of the University, an office however which he willingly resigned for that of grand master of the Faculties of Protestant Theology in 1822. He himself stipulated that he should receive no salary for this latter office. He was made at the same time one of the vice presidents of the Bible Society. Through his care fifty new Protestant cures were created in France. He also established new professorships of history, living languages, and natural history, in the minor schools of the kingdom. In 1825 he republished, separately, the preliminary discourse to the 'Recherches sur les Ossemens Fossiles,' which is generally known by the title of 'Discours sur les Revolutions de la Surface du Globe,' and has been translated into most European languages under the title of 'Theory of the Earth.' This work is not a system of mere speculative theory, but a series of deductions from actual facts, authenticated by his own researches into the fossil remains, classed according to the strata in which they were found. Cuvier draws the following conclusions: 1st. That in the strata called primitive there are no remains of life or organized existence. 2nd. That all organized existences were not created at the same time, but at different times, probably very remote from each other; vegetables before animals, the mollusca and fishes before reptiles, and the latter before the mammalia. The transition limestone exhibits the remains of the lowest forms of existence; the chalk and clay conceal the remains of fishes, reptiles, and quadrupeds, the beings of a former order of things which have now disappeared. 3rd. That among fossil remains no vestige appears of man or his works, no bones of monkeys are found, no specimen of the whole tribe of quadrumanous animals. 4th. That the fossil remains in the more recent strata are those which approach nearest to the present type of the corresponding living species. 5th. That the stratified layers which form the crust of the globe are divisible into two classes, one formed by fresh water and the other formed in the waters of the sea; a fact which leads to the conclusion that several parts of the globe have been alternately covered by the sea and by fresh water. From these and other facts, Cuvier concludes that the actual order of things on the surface of our globe did not commence at a very remote time: he agrees with Deluc and Dolomieu, that the surface of the earth was subject to a great and sudden revolution not longer than five or six thousand years ago, and that this catastrophe caused the disappearance of countries formerly the abode of man and of species of animals now unknown to us. But he also believes that the countries now inhabited had been at some former period, long before the creation of man, inhabited by land animals, which were destroyed by some previous convulsion, and that this globe has undergone two or three such visitations, which destroyed as many orders of animals, of which we find the remains in the various strata. At the close of his work on fossil remains he thus modestly expresses himself: 'I have no doubt, that in a few years, the work which I now terminate, and to which I have devoted so much labour, will be but a trifling sketch, a first glance thrown over the immense creations of antient times.'

In 1826 Charles X. bestowed on Cuvier the decoration of grand officer of the legion of honour; and the king of Würtemberg, his former sovereign, made him commander of his order of the crown. In 1827 Cuvier, as a member of the cabinet of the interior, was intrusted with the superintendence of all affairs concerning the different religions professed in France, except the Catholic. In the same year he had the misfortune to lose his only remaining child, a daughter, amiable and accomplished, and on the eve of her marriage; a loss from which he never entirely recovered, although a sense of his public duties made him stifle his grief. In 1828 appeared the first volume of his 'Histoire Naturelle des Poissons;' a splendid work, of which he lived to see eight volumes published, and which has been since continued, and is to be completed in twenty volumes. It contains more than 5000 species of fishes, described from real specimens and classed, with observations on their anatomy, and critical researches on their nomenclature, antient as well as modern.

In 1830 Cuvier opened a course in the Collége de France on the history and progress of science, and especially of the natural sciences, in all ages. In the same year he paid a second visit to England, and it was during his absence from Paris that the revolution of July took place. On his return he was graciously received by the new king Louis Philippe, who in 1832 made him a peer of France. On the 8th of May of that year, he opened the third and concluding part of his course of lectures on the history of science, by summing up all that he had previously said; he then pointed out what remained for him to say respecting this earth and its changes, and announced his intention of unfolding his own manner of viewing the present state of creation. This discourse, delivered in a calm solemn manner, produced a deep impression on his hearers, which was increased when he added the concluding words: 'These will be the objects of our future investigations, if time, health, and strength, shall be given to me to continue and finish them with you.' That was his last lecture. The following day he felt ill, and soon after paralysis manifested itself. He saw the approach of death with resignation, and on the 13th he expired, at the age of sixty-three, universally regretted. He was buried in the cemetery of Père la Chaise; his funeral was attended by deputations from the Council of State, the several academies, by members of the two Chambers, &c.

The career of this great and good man, passed quietly but most usefully in the pursuits of science, and in instructing and benefiting mankind, during forty years the most eventful in the history of France and of Europe, forms a striking contrast with that of the conquerors and politicians who agitated the world during the same period. His works, of which we have mentioned a few of the most important, are very numerous, and even a mere catalogue of them would exceed our limits. The reader will find a full list of them in chronological order in the very interesting *Memoir of Baron Cuvier*, by Mrs. R. Lee, to which, as well as to a well written article on the *Life and Labours of Cuvier* in No. XXVIII. of the *Foreign Quarterly Review*, December, 1834, we are indebted for most of the materials of this notice. Numerous eloges of Cuvier have also appeared in France, by MM. Duvernoy, Pariset, Laurillard, &c.

Cuvier himself wrote numerous eloges, among others, of Bruguières, Daubenton, Lemonnier, Priestley, Adanson, Saussure, Bonnet, Fourcroy, Pallas, Rumford, Werner, Sir Joseph Banks, Délambre, Berthollet, Lacepède, Fabbroni, Ramond, Sir Humphry Davy, &c. These eloges, which are really interesting biographies, have been published in 3 vols., 8vo. He also contributed to the 'Dictionnaire des Sciences Medicales,' the 'Biographie Universelle,' and to the 'Dictionnaire des Sciences Naturelles.' The article 'Nature,' in the last, is deserving of especial attention. There is a little work of Cuvier, a small 12mo., which although out of the sphere of his general studies, deserves mention. It consists of a discourse on the distribution of the annual prize established by the philanthropist M. de Montyon under the name of 'prix de vertu,' to be given to those who have excelled by their active virtues in doing good to their fellow-creatures. Louise Scheppler, the villager of the Vosges, and disciple of the venerable Oberlin, was one of those who received the prize.

CUXHAVEN, a large and important harbour on the left bank of the Elbe, at its entrance into the German Ocean. It is situated in 53° 53′ N. lat. and 8° 44′ E. long. in the bailiwick of Ritzebüttel, which lies along the northern shores of the Hanoverian duchy of Bremen, and belongs to the free city of Hamburg. It affords a secure shelter against this dangerous sea in the winter months, or to ships waiting for fair winds. It contains about 800 inhabitants, chiefly pilots and fishermen; has a lighthouse, excellent bathing establishments, and arrangements for the performance of quarantine. There is also a regular communication with England by the packets, which formerly took their departure from Cuxhaven. The chief magistracy is always vested in a senator of Hamburg.

CUZCO, a town in South America, in the Republic of Peru, 260 miles from the Pacific, 13° 42′ S. lat., and 71° 4′ W. long. Before the arrival of the Spaniards it was the capital of the extensive empire of the Incas, and is said to have been built by the founder of the empire, Manco Capac, in the tenth or eleventh century of our æra. In the year 1534, when it was taken by Francis Pizarro, the Spaniards were astonished at the magnificent buildings which it contained, especially the Temple of the Sun. Of this temple there remain at present only some walls of singular construction, upon which stands the magnificent convent of Santo Domingo.

The town is built at the foot of some hills in the middle of a wide valley, which has an undulating surface. This valley extends eastwards to a mountain stream, the Quillabamba, and in the lower part is well cultivated, the fields having the advantage of irrigation. The houses of Cuzco are built of stone, covered with red tiles. Many of them still retain their original walls. The great size of the stones used in their construction, the variety of their shapes, and the excellent workmanship which they display, give to the city an interesting air of antiquity. The cathedral, the convents of S. Augustin and of La Merced, are very large buildings, inferior in architecture to few in the old world.

Upon a lofty hill, a little north of the city, are the ruins of a great fortress, many parts of the wall of which are even now in perfect preservation. They consist of stones of extraordinary size, and of polygonal shapes, placed one upon another without cement, but fitted with such nicety as not to admit the insertion of a knife between them. This stupendous work was erected by the Incas for the protection of their capital.

The population exceeds 40,000, of whom a great part are Indians, who are distinguished by their industry; they manufacture cotton and woollen goods, and tan leather. Their embroideries and carved furniture are much valued. The town formerly contained several institutions for education, as a university, two colleges, &c.; but we do not know what changes have taken place in this respect since the expulsion of the Spaniards.

The great high road of the Incas extended from this town northward as far as Quito, and southwards probably to the southern extremity of the valley of the Desaguadero to the neighbourhood of Oruro, or from the equator to 20° south lat. (Ulloa; *Memoirs of General Miller.*)

CYANIC ACID, a compound of cyanogen and oxygen. When a mixture of ferrocyanide of potassium and binoxide of manganese is heated to redness, and the residue is boiled in alcohol of specific gravity 0·86, tabular crystals are formed as the solution cools, which are cyanate of potash; this acid forms insoluble salts with solutions of lead, silver, &c., and when these are diffused through water and sulphuretted hydrogen is made to act upon them, metallic sulphurets are precipitated, and cyanic acid remains in solution; this is a sour fluid, the smell of which resembles that of vinegar; it decomposes with great facility. It is composed o

$$\left.\begin{array}{lr}\text{Two equiv. of Carbon} & 12\\ \text{One „ Azote} & 14\end{array}\right\} = \text{One equiv. Cyanogen } 26$$

One „ Oxygen 8

Equivalent 34

There is another acid, constituted of similar proportions of cyanogen and oxygen, which is isomeric with this acid; but which, on account of the explosive nature of some of its salts, is called *fulminic acid*. [Fulminic Acid.]

CYANOGEN, or bicarburet of azote, is a gaseous compound sometimes termed *Prussine* or *Prussine gas*. This gas was discovered by Gay Lussac in 1815; it is prepared by heating bicyanide of mercury in a retort by means of a spirit lamp; the cyanogen comes over in the gaseous state, and metallic mercury is distilled. This gas is colourless, and has a peculiar and pungent odour; under a pressure of 3·6 atmospheres, and at a temperature of 45°, it is reduced to the state of a limpid fluid, but which resumes the gaseous state when the pressure is removed. It is inflammable and burns with a purple flame; but a taper immersed in it is extinguished. It is not readily decomposed by heat. At the temperature of 60° water absorbs 4·5 times its bulk, and alcohol 23 times. The acid property of reddening litmus paper is exhibited by the aqueous solution; but this is probably dependent upon the formation of acids by the mutual decomposition of the cyanogen and water. The name of cyanogen is derived from κύανος, *blue*, and γένος, a termination common to many other chemical terms, as oxygen, hydrogen, &c. It is an essential ingredient of Prussian blue.

This gas is composed of 100 cubic inches of azotic gas, weighing 30·1 grains, and holding 25·1 = 55·9 gr. of carbon in solution; its specific gravity is therefore to that of atmospheric air as 1·803 to 1. It is constituted of

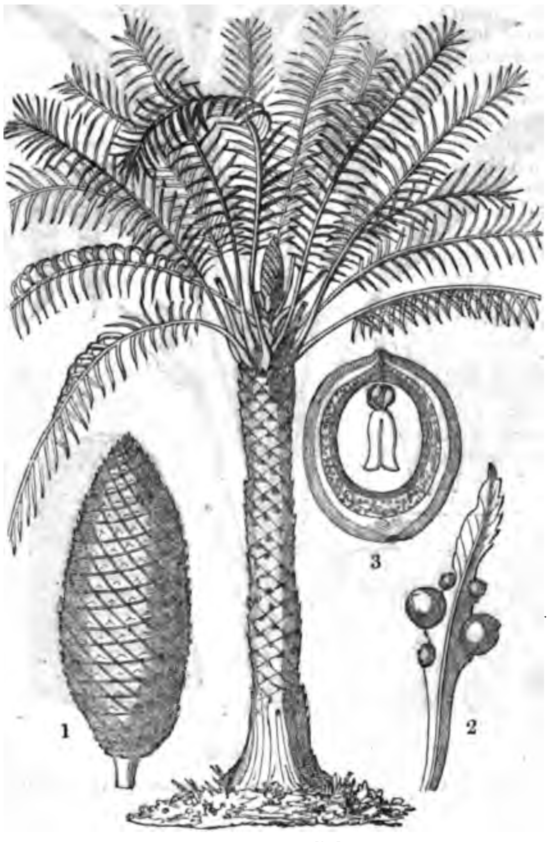
Two equivalents of carbon 12
One „ azote 14

Equivalent 26

When one volume of this gas is mixed and detonated with two of oxygen over mercury, there are produced two volumes of carbonic acid gas and one volume of azotic gas. Cyanogen combines with several metals to form single and double cyanides or cyanurets. One of the most useful and remarkable of the simple cyanides is the well-known pigment Prussian-blue, which is composed of 9 equivalents of cyanogen and 7 equivalents of iron. A double and well-known cyanide is the ferrocyanide of potassium; it is a crystalline salt of a fine yellow colour, prepared by heating animal matter and potash in an iron vessel; the residue is a coaly matter which is partially soluble in water, and by evaporation gives the crystals in question. These are composed of one equivalent of cyanide of iron 54, two of cyanide of potassium 132, and three of water 27 = 213. This salt, when added to a solution of sulphate of iron with certain precautions, produces percyanide of iron or Prussian blue.

Cyanogen combines with various elementary bodies to form peculiar compounds; thus with hydrogen it forms prussic or hydrocyanic acid; it unites also with chlorine and sulphur to form chlorocyanic and sulphocyanic acids.

CYCADA′CEÆ, one of the natural orders of Gymnospermous plants. It is essentially characterized by its trunk growing in a cylindrical unbranched manner in consequence of the development of one terminal bud only, and by its diœcious flowers, of which the males at least grow in cones, composed of peltate scales. In one genus, Zamia,



[Cycas circinalis.]

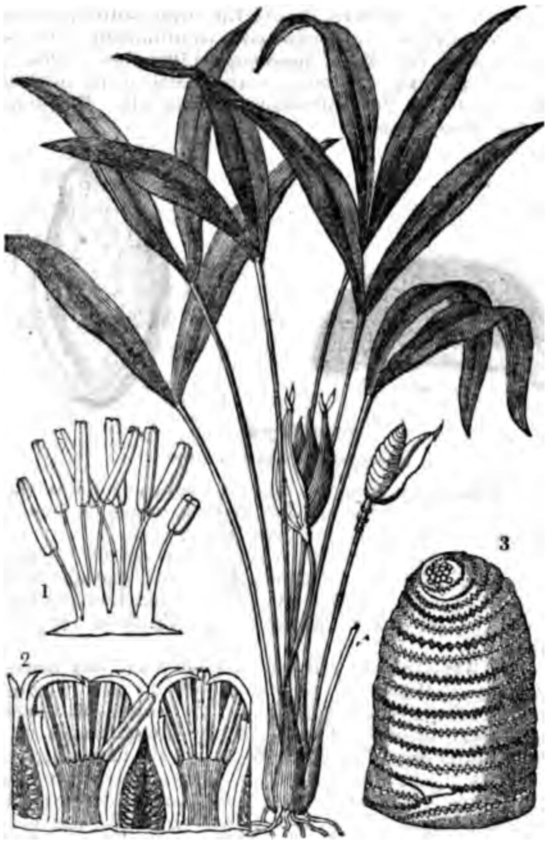
1, a male cone; 2, a female spike; 3, a section of a ripe fruit.

the female flowers also are disposed in the same manner; in the other, Cycas, they are placed upon the toothings of abortive leaves, occupying the centre of the terminal bud. The leaves of these plants are pinnated, and have a certain resemblance to those both of ferns and palms; their wood is arranged both in concentric circles, which in Cycas are numerous, and in a confused manner among the central pith; so that a Cycadaceous stem partakes in structure of the peculiarities of both Exogens and Endogens. In the manner in which their leaves unrol, and in their terminal single bud, Cycadaceæ resemble Ferns, with which they may moreover be compared on account of their fruit proceeding from leaves; with Coniferæ they accord in the cone-like arrangement of their parts of fructification and their naked ovules; and with Palms in the secretion of a large quantity of fæcula in their stem, in their mode of growth, and in the arrangement of a part of their woody system. Cycadaceæ therefore, belonging as they do to Gymnosperms, possess nearly equal affinity with Palms or Endogens, and Tree-ferns, or Acrogens.

A few plants inhabiting India, New Holland, the Cape of Good Hope, and tropical America, constitute the whole of this order, all the species of which contain a large quantity of fæcula in their trunk. Cycas circinalis yields a coarse sort of sago in the East Indies, and arrow-root of the finest quality is manufactured from Zamia furfuracea in the West Indies.

CY'CLADES. [Archipelago, Grecian.]

CYCLANTHA'CEÆ, a highly curious but little known natural order of plants, allied to Pandanaceæ, from which their habit and fructification distinctly divide them. They have plaited, slit, stalked leaves, and a spadiceous inflorescence like Araceæ; the flowers are arranged in spiral bands upon the spadix, one band being alternately male and the other female. The whole order consists of a very small number of tropical American plants. (See Lindley's *Natural System of Botany*, p. 362.)



[Cyclanthus bipartitus.]

1, a panel of stamens from a male ring; 2, a section of a spadix; 3, the upper portion of an entire spadix.

CYCLAS. [Veneridæ.]

CYCLE. This term, which means nothing but circle (κύκλος), has an arbitrary use in chronology. Certain of the cycles, or recurring methods of denoting time, which are in common use, are called cycles, to the exclusion of the rest. The principal of these, if not the only ones, are the Metonic cycle [Meton, Calippus], the solar cycle, and the cycle of Indiction. But the natural cycles, such as the revolutions of the sun and moon, are not called cycles; nor even some of the artificial ones, such as the Julian period. It would be useless to retain this artificial and confused distinction. Under the distinctive words Meton, Indiction, &c., the reader will find the origin of each method of reckoning; while in the article Period or Revolution he will see a table of the lengths and commencements of all the cycles, natural and artificial, whether called cycle, period, year, day, or month.

CY'CLICA, a section of coleopterous insects. According to Latreille, this group forms a subsection of the section Tetramera; the groups Tetramera, as well as Pentamera, however, we imagine are somewhat artificial. See Coleoptera.

The section Cyclica contains the Linnæan genera *Hispa*, *Cassida*, and *Chrysomela*, the species of which may be distinguished by the following characters:—Tarsi four-jointed, furnished beneath with a velvet-like substance; the penultimate joint bilobed; antennæ of moderate length, generally filiform, or increasing in thickness towards the apex; body usually of a rounded or oval form, the thorax being, at the base of the same width as the elytra.

These insects are usually of brilliant metallic colouring: various shades of green appear to predominate. Their larvæ have a soft body, and are furnished with six legs, attached two to each of the three first segments, or those next the head. They feed upon the leaves of plants.

To this group belong the following families:—*Cassidiadæ*, *Chrysomelidæ*, and *Galerucidæ**. The principal genera belonging to the family Cassidiadæ are, *Alurnus*, *Hispa*, *Chalepus*, and *Cassida*. To these genera we shall at present confine our remarks, commencing with the genus *Cassida*, the technical characters of which are:—Body oval or rounded, depressed; thorax generally somewhat semicircular, with the anterior portion produced so as to conceal the head; mandibles with three notches on the inner edge; external lobe of the maxilla as long as the inner one.

The Cassidæ are usually of a somewhat flattened form, and are remarkable for their having the external margins of the elytra projecting beyond the body; the outer margins of the thorax are also produced, and conceal the head. Those parts which extend beyond the animal itself are generally semitransparent and flattened, whilst the parts which immediately cover the insect are more or less convex. When the insect is at rest, the legs, which are rather short and compressed, are retracted, and the external margins of the elytra and thorax are applied closely to the plant on which it lives. The larvæ of the Cassidæ are of a depressed form, and usually armed on the upper parts with numerous little spines; these are longest on the sides of the body and at the tail. The use of these little spines appears to be for the purpose of holding the excrement of the animal, which is always deposited upon its back, and probably serves as a means of defence, by concealing it from its enemies.

Cassida viridis, an insect not uncommon in this country, is about a quarter of an inch in length, and of a bright green colour above; the body beneath is black. This species lives both in the larva and imago states upon thistles.

Mr. Stephens, in his 'Catalogue of British Insects,' enumerates nineteen species of this genus.

The insects belonging to the other three genera of the Cassidiadæ have the body of a more elongated form than those just described, and the head is exposed, the margins of the thorax and elytra not being produced. They are all included in the genus *Hispa* of Linnæus.

CYCLOBRANCHIANS. (Cuv.) [Cyclobranchiata Cervicobranchiata.]

CYCLOBRANCHIA'TA. M. De Blainville's third order of the second section of his subclass *Paracephalophora monoica*.

Family character.—Organs of respiration branchial, form of foliated branches, placed together symmetrically near the vent, which is situated in the mesial line of the posterior part of the body. Skin naked, and more or less tuberculous. (De Blainville.)

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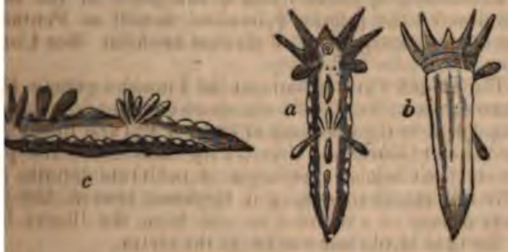
* The characters of these families are given under their proper heads

Genera Doris.*

ly oval, more or less depressed; the borders of the c going beyond the foot and head on all sides. Four *ula*, two of which are superior and contractile within ty, and two inferior under the border of the mantle. at the extremity of a small fleshy tube, without but with a lingual mass beset with denticles of some *Branchiæ* ramified, or in form of projecting foliated hes, disposed in a circle more or less complete in front vent. Organs of generation terminating on the r part of the right side in a common tubercle.

a.

cies which have the anterior border of the mantle d into many strap-like portions symmetrically disposed. s *Polycera*, Cuv.) Example, *Doris cornuta*.



[Doris cornuta.]

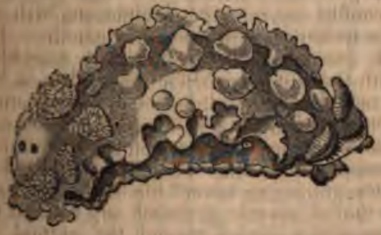
a, seen from above; *b*, seen from below; *c*, side view

β.

s the anterior border of whose mantle is undivided.

*

Body prismatic.
Example, *Doris lacera*.



[Doris lacera.]

**

Body very convex (bombé) above.
Example, *Doris verrucosa*.

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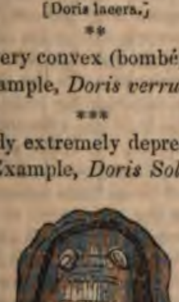
Body extremely depressed.
Example, *Doris Solea*.

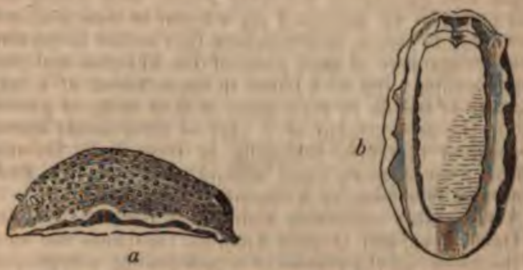


[Doris Solea.]

ts, &c.—There are many species spread abroad in all seas, where they live upon rocks. The student refer to Cuvier's monograph in the *Annales du n*, vol. iv.; and to De Blainville's in the *Dictionnaire ences Naturelles*.

Onchidoris.

oval, tumefied (bombé) above. *Foot* oval, thick, overpassed throughout its circumference by the borders of the mantle. Four *tentacula* as in *Doris*, besides the labial appendages. *Organs of respiration* formed by very small ramifications, disposed circularly, and contained in a cavity situated at the posterior and mesial part of the back. *Vent* mesial at the inferior and posterior part of the border of the mantle. Orifices of the *organs of generation* very distant, and united by an external furrow occupying the entire length of the right side. Example, *Onchidoris Leachii*.



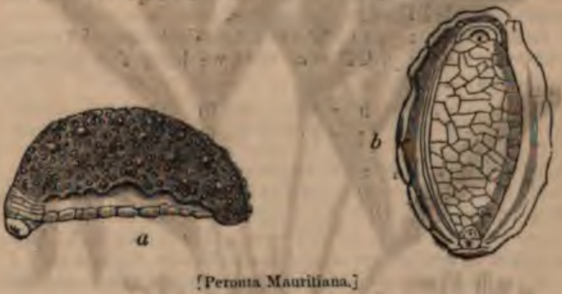
[Onchidoris Leachii.]

a, side view; *b*, seen from below.

M. De Blainville established this genus for a mollusk in the British Museum, the locality of which was unknown.

Peronia.

Body suboval, tumefied above. *Foot* oval, thick, overpassed throughout its circumference by the borders of the mantle. Two inferior *tentacula* only, depressed, and but little contractile, and two labial appendages. *Respiratory organ* nearly retiform or pulmonary, in a cavity situated at the posterior region of the back, and opening externally by a rounded mesial orifice, pierced at the inferior and posterior part of the borders of the mantle. *Vent* mesial, situated in front of the pulmonary orifice. Orifices of the organs of generation very distant; that of the ovary entirely at the posterior extremity of the right side, continued by a furrow to the root of the labial appendage of that side: orifice of the exciting organ very large, nearly mesial at the anterior part of the root of the tentacle of the same side. Example, *Peronia Mauritiana*.



[Peronia Mauritiana.]

a, side view; *b*, seen from below.

M. De Blainville observes, that this genus contains the marine *Onchidia* of Cuvier, and that he knows of four or five species, all from the southern hemisphere.

N. B. The *Cyclobranches*, Cyclobranchians of Cuvier, form the eighth order of Gastropods of that zoologist, and contain the genera *Patella*, Linn., and *Chiton*, Linn. CERVICOBRANCHIATA, vol. vi., p. 440 et seq.; CHITONS, vol. vii., p. 94 et seq.

CYCLOID (κυκλοειδής, like a circle), a name very incorrectly given to the curve which is traced out by any point of a circle rolling on a straight line. Thus while the wheel of a carriage revolves, each nail on the circumference describes a succession of cycloids. We might also here describe the various curves made by the points of circles which roll inside or outside of other circles, &c. &c. But as the cycloid stands apart from all the rest, both in simplicity and historical notoriety, we shall here confine ourselves to this one curve alone, and refer the rest to the head TROCHOIDAL CURVES.

If we suppose a circle to roll on a straight line, it is obvious that the centre will advance in every moment through a length equal to the portion of the circumference which is brought in contact with the line on which the circle rolls. That is,

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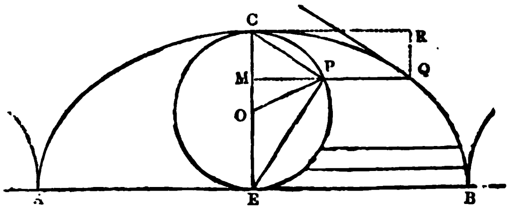
* erm Doris was originally applied by Linnæus to an animal of this Müller and Gmelin afterwards extended it to all the *Nudibranchiata* s with naked branchiæ. Cuvier and De Blainville have restrained e.



Supposing C, the point now highest on the circle, to be the one whose path is to be traced, then, by the time the mere rotation would have brought this point to P, the whole system will have been carried forward through a length PQ equal to the arc CP. Hence follows a very simple mode of conceiving the form of a cycloid · at every point P imagine a line PQ parallel to AB and equal to the arc CP; the extremities of all these lines will be in the cycloid. The arc AC, through which the point on the circle rises from the line AB to its highest position, is similar and equal to the arc CB through which it descends. In the diagram we see small parts of the preceding and succeeding cycloids.

The principal properties of the cycloid are as follows:—

1. PQ is equal in length to the *arc* CP.
2. The tangent at Q is parallel to the *chord* CP.
3. The arc CQ is twice the chord CP, and the whole arc ACB is four times CE, the diameter of the generating circle.
4. Complete the rectangle CQR; the area CQR is equal to the circular area CPM, and the whole area ACB is three times that of the generating circle.
5. The curvature at Q is the same as that in a circle whose radius is twice EP, and the involute and evolute (see these terms) of a cycloid are both cycloids of the same magnitude.
6. If the figure be reversed, so that C is the lowest point of the cycloid, and A and B the highest points; then, no friction being supposed, and the cycloid being of resisting matter, a small weight placed at Q will take the same time to slide to C, wherever the point Q may be. Hence all the arcs of the cycloid are said to be *synchronous*.
7. On the same supposition as in the preceding, a weight will slide from B to Q in a shorter time than in any other curve which can be drawn between B and Q. Hence the cycloid is called the *brachystochron*.

Let θ be the angle COP (in theoretical units) [ANGLE], CM = x, MQ = y, OP = a, then we have the following equations:—

$$x = a\,(1 - \cos\theta)$$
$$y = a\,(\theta + \sin\theta)$$

from which the properties of the curve may be deduced.

If, instead of measuring PQ from P, we had carried it forward from M, then Q would have described a curve known by the name of the *companion to the cycloid*, but which is in truth a *curve of sines*. [SINES, CURVE OF.]

The history of the cycloid is remarkable from the contests which it produced, and the manner in which the names of Galileo, Descartes, Mersenne, Pascal, Roberval, Wallis, and others, appear in connexion with it. But there would be little use in giving an abstract of history on points of no material use, and the interest of which depends on the light in which a detailed account, and nothing less, would place the state of science of the seventeenth century. Gallileo was certainly the first who attempted the investigation of the properties of the cycloid, as appears from a letter to Torricelli, written in 1639. (See Montucla, *Hist. des Math.*, vol. ii. p. 52, &c.)

CYCLO'LITHES. [MADRIPHYLLIÆA.]

CYCLOPÆ'DIA. [DICTIONARY.]

CYCLOPS. (Zoology.) [**BRANCHIOPODA, vol. v. p. 340 et seq.**]

CYCLO'STOMA. [**HELICIDÆ.**]

CYDER. [CIDER.]

CYDNUS. [ANATOLIA; CILICIA.]

CYDO'NIA VULGA'RIS, or QUINCE, of the fruit of which there are two varieties, apple-quince and pear. The seeds are the part used in medicine, on account of the mucilage which they yield. The seeds are more numerous in the small hard than in the large fleshy fruits. They generally occur in large irregularly-shaped masses, as they easily adhere to each other, owing to the mucus which invests them. When moistened in the mouth or in water, they give out a large quantity of mucilage, which is white, and not coag by boracic acid. One part of these seeds will render 50 parts of water so mucilaginous, that it will posse thickness of a syrup. They should be set to digest i water, otherwise the mucilage acquires the odour of cyanic acid. Indeed the actual presence of, or tende form, hydrocyanic acid, may be demonstrated by distil (Stockmann.) Many seeds yield a yellow-coloured mu If allowed to remain in a fluid state the solution soon but by careful evaporation the mucilage may be brou a dry state; or, as proposed by Zier, the mucilage precipitated from its watery solution by alcohol. Ten of seeds yield two ounces of dried mucilage, two gr which, with distilled water, produce one ounce of mu of proper consistence for use. In whatever way obt the mucilage possesses demulcent qualities, and employed either internally, or as a lotion, which is esp applicable to the faces of those who suffer from th winds of winter and spring.

CYGNUS (the swan), one of the old constellati Aratus, who refers it to the fable of Leda, as does Hi but the latter gives another fable of the same kind. bright star (Deneb), *α* Cygni, may be seen on the at eight o'clock in the beginning of October; the stars in Aquila, Lyra, and Cygnus form a rema triangle.

The principal stars are as follows:—

Character. Not in Bayer ().	No. in Catalogue of		Magnitude.	Character. Not in Bayer ().	No. in Catalogue of	
	Flamsteed and Piazzi.	Astron. Society.			Flamsteed and Piazzi.	Astron. Society.
κ	1	2254	4	ω^2	45	2415
α	2	2267	5	ω^3	46	2420
	3	2271	6	a	50	2444
β^1	6	2281	3½	ε	53	2455
	9	2296	6	λ	54	2458
ι^2	10	2284	6		57	2477
ϕ	12	2307	5	ν	58	2489
θ	13	2303	4	ξ	62	2505
	15	2316	6	f^2	63	2509
χ	17	2323	5	ζ	64	2512
δ	18	2321	3½	τ	65	2519
	22	2346	6	υ	66	2524
b^2	28	2376	5	σ	67	2523
o^2	31	2387	5	g	71	2553
	32	2394	5½	ρ	73	2561
	33	2391	5	μ	78	2582
γ	37	2401	3	π^1	80	2580
(h)	39	2402	6	π^2	81	2593
(i)	41	2411	4		(258)	2440

CYGNUS. [SWAN.]

CYLINDER, in mathematics (κύλινδρος), a nam generally to the surface formed by a straight line moves parallel to itself, whatever may be the guiding but frequently confined to the common definition, supposes the straight line to be of finite length, move round the circumference of a circle, keeping at right angles to its plane. We shall extend this and treat of the cylinder which has an oval for it and the moving line at right angles to the plane of t whence the cylinder is called a *right* cylinder.

The cylinder may be considered as a cone, of wh apex is at an infinite distance; and many of the notions in the article CONE may be applied to it.

The content of a cylinder (in cubic units) is the of square units in the base multiplied by the nu linear units in the altitude. Thus the cylinder circular, the base having a radius of 10 feet, and tude being 7 feet, the number of square feet in the 100 × 355 ÷ 113, or 314·59, which, multiplied by 2202·13, the number of cubic feet in the cylinder. the number of square units in the surface, multi number of linear units in the circumference of the that in the altitude. Thus in the preceding c number of feet in the circumference of the 20 × 355 ÷ 113, or 62·918, which, multiplied by 440·426, the number of square feet in the cylindri of the surface, exclusive of its two terminating planes. [Prism, Subcontrary.]

CYMATIUM. [Column.]

CYMBA. [Volutidæ.]

CYMBALS (κύμβαλον), metallic musical instruments of percussion, which are traceable to the remotest ages of antiquity, and, with no great change in form, are still used by the moderns. They are always in pairs, are made of brass, and, according to Greek sculptures and medals, antiently took, as their name imports, a more cup-like shape than at present. Servius says that the cymbals were consecrated to Cybele—that is, were employed by her priests—because they represented the two celestial hemispheres which surround the earth. They are now nearly flat, about twelve inches in diameter, the central part sunk in, and at the back of the sunken portion is a strap, by which each instrument is held. The sound is produced by striking them more or less violently together, and in the open air they produce a very martial effect, but are entirely out of place in the theatre and concert-room. Into the latter, indeed, they have not yet often intruded, but in modern theatrical music they take a prominent part, the composer now making up by noise what he wants in genius and taste.

CYMBU'LIA. [Thecosomata.]

CYME, an irregular kind of panicle, having a corymbose appearance, and in which each branch is stopped in its growth after producing a single flower, when it is forced to form lateral branches, which are themselves stopped after forming one flower. The common Laurustinus or the Elder-bush offer examples of this sort of inflorescence.

CYMODOCEA. [Isopoda.]

CYMO'THOA. [Isopoda.]

CYNANTHUS. [Humming Birds.]

CY'NARA, a genus of Compositæ, in many respects like the thistle, but having an involucre composed of thick fleshy spiny scales, and a remarkably thick fleshy receptacle, covered over with numerous bristles. The two species most known are the Artichoke and the Cardoon.

C. Scolymus, the artichoke, so long cultivated in our gardens as a vegetable, came originally from the south of Europe, and though it has long been cultivated in the regions of the north, it does not resist the very severe cold of winter. Its perennial root is thick, fleshy, hard, branching, and gives rise to a cylindrical, glabrous, rather branching stem, from two to three feet high, to which are attached very large pinnatifid leaves, of a pale green above, whitish beneath, deeply serrated in lobes, and irregularly toothed. The heads stand singly at the top of the ramifications of the stem; they are as large as the doubled fist: their receptacle is very thick, fleshy, concave, furnished with simple bristles; the leaflets of the involucre are broad, thick, and terminated in a spiny point. All the florets are hermaphrodite and of a clear violet colour; the tube of the corolla is very long; its limb has five very narrow segments; the staminal tube is very prominent, of the same colour as the corolla. The pappus is sessile and feathery. The root of the artichoke is rather bitter, the stem still more so. It was formerly employed as a diuretic, but it has long been cultivated only as a kitchen garden plant. Everybody knows that the heads of the plant are gathered before the expansion of the flowers, and that the receptacles or the base of the involucral scales are eaten, either raw or after having been boiled in water. The artichoke when cooked is an agreeable food, not very nourishing perhaps, but easy to digest. The receptacles, or artichoke bottoms, may be preserved for winter use by drying them after having blanched them in boiling water.

C. Carduncellus, the Cardoon. The country of the cardoon is the same as that of the artichoke; it is found in the southern countries of Europe and in the north of Africa. Its thick and fleshy leaves cut into spiny lobes with very prominent ribs, its more slender stems terminated by heads of flowers three or four times smaller, with a thin receptacle, and the scales of the involucre armed with sharp spines, easily distinguish it from the artichoke. Some authors, however, have endeavoured to prove that the artichoke is only a variety of the cardoon. This opinion, however, does not appear well founded; for if it were so, among the great quantity of cardoons that are cultivated in gardens some plants would be found transformed into artichokes, which has never happened. In this species it is the rib, or the middle nerve of the leaves, which is eaten. When cooked it is tender, and its flavour greatly resembles that of the artichoke. It is in general a choice dish, and seldom seen except at the tables of persons in easy circumstances.

CYNAREÆ. [Compositæ.]

CYNAROCE'PHALÆ. [Compositæ.]

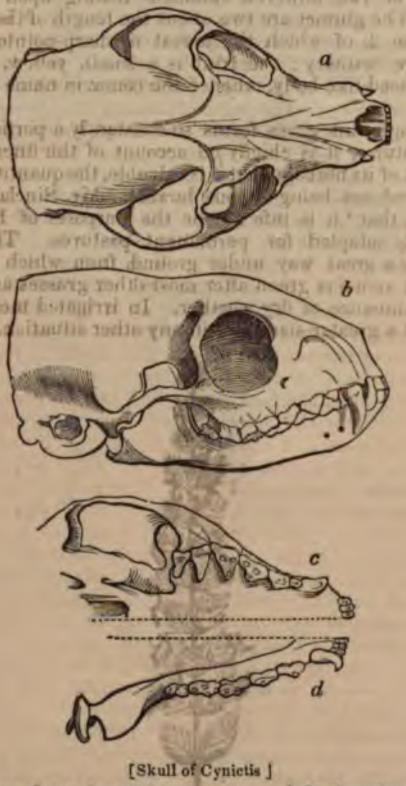
CYNA'RRHODON, a name given sometimes to the hep of the rose, which is a fruit composed of a succulent calyx-tube enclosing a number of hard dry hairy nuts.

CYNICS, the name of a sect of Greek philosophers who were produced by the school of Socrates, and were so called according to one interpretation of the word (κυνικοί, dog-like) from their snarling disposition, though it is possible that the name may have been derived from the gymnasium called Cynosarges, in which Antisthenes, the founder of this school, used to lecture. [Antisthenes.] Their doctrines were the exact opposite of those of the Cyrenaics, who were also an offshoot of the Socratic philosophy. [Cyrenaics.] They held that virtue was not only the highest but the only object at which men ought to aim, and that most of the sciences and arts, as they do not tend to make men virtuous, but sometimes on the contrary interfere with the attainment of it, are unprofitable and pernicious. The true philosopher, according to their notions, was he who could discard all the comforts and charities of life and triumph over his bodily wants, so as to be enabled to live only for virtue without any interruptions either to the contemplation or the practice of it. The result of these principles was great strictness of morals, and voluntary penances worthy of the fanaticism of an eastern dervise; and as long as these characteristics were coupled with ability in the professors and consistent philosophy in what they taught, the sect maintained its place by the side of other philosophical systems, and some members of it, for instance Antisthenes and Diogenes, deserved and obtained great celebrity. [Diogenes.] At length, however, the morality of the Cynics degenerated into the most shameless profligacy (see the case of *Crates* and *Hipparchia* in Diogen. Laërt., vi., § 97), and they became so disgusting from their impudence, dirty habits, and begging, that they ceased to be regarded with any respect, and the sect dwindled away into obscurity. Of their speculative opinions we know very little: indeed it does not appear that they had any theories except on the science of logic. The great merit of the Cynic philosophy was that it paved the way for the establishment of Stoicism, which succeeded and superseded it, just as the philosophy of Epicurus supplanted that of Aristippus. The connexion of this school with the philosophy of Socrates appears to have consisted in their developing the idea of science as applied to morality (to which object the labours of Socrates were mainly directed), but they did so to the exclusion of all those other principles which Socrates admitted as useful adjuncts, and his sneers at the austerity and affected negligence of Antisthenes may be taken as a proof of the low opinion which he entertained of this narrow application of his doctrines. (Diogen. Laërt., vi., § 8; ii., § 36.) The classical reader will find in Lucian's *Cynicus* an attempt to justify some of the peculiar views of this school, especially in regard to their neglect of the conveniences of life, though it is not to be supposed that Lucian was inclined to the Cynical philosophy, for he elsewhere ridicules it. (See the *Lapithæ* and the *Vitarum Auctio*.)

CYNICTIS (Zoology), a genus of *Carnivora* established by Mr. Ogilby for a mammiferous quadruped connecting the family of the *Civets* with that of the *Dogs*.

Generic character. Dental formula:—incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{6-6}{5-5}$. Of these last the three first are spurious, the fourth is the carnassier, and the rest are tuberculated. *Feet*, digitigrade; toes, 5 – 4, with long falcular claws adapted for digging. *Tail*, long, bushy.

'This system of dentition,' says Mr. Ogilby in his paper in the 1st volume of the 'Zoological Transactions,' 'is, in most respects, extremely similar to that which is common to the *Viverræ* in general, and particularly to the genus *Herpestes*, from which the *Cynictis* differs principally in the absence of the rudimentary false molar of the lower jaw, in having that of the upper jaw in contact with the canine, and in a few other circumstances of very minor importance when compared with the general character of the organization. From the *Ryzæna* or *Suricate*, on the other hand, the dental system of *Cynictis* differs in the presence of the superior rudimentary false molar, being thus directly intermediate, in point of dentition, between this genus and the Herpestes; and it is not a little singular that it should bear precisely the same relation to both these genera in the form and number of its toes. The *Herpestes* have rudimentary false molars both in the upper and under jaws, and five toes both before and behind; the *Cynictis* has rudimentary false molars only in the upper jaw, five toes on the fore and only four on the hind feet; the Ryzæna has no rudimentary false molars in either jaw, and four toes only, as well on the anterior as on the posterior extremities. These traits of zoological character strongly point out the true natural relations of all these animals, and demonstrate the relative positions which they occupy in the system of nature. With the single exception of the *Proteles*, there is no other known genus of the *Viverra* family which possesses the same number of toes and complete digitigrade extremities which form so prominent a character in the Cynictis*. Here however all analogy ceases between these two genera. It is true that we are at present ignorant of the adult characters of the dentition of the *Proteles;* when we become better acquainted with this important part of its organization, we may perhaps discover additional points of relation between it and the present genus; but in all its most striking external characters it is completely different, and seems to occupy an intermediate station between the *Dogs*, the *Civets*, and the *Hyænas*. In addition to these characters the *Cynictis* may be readily distinguished by its external form and appearance from all conterminous genera. It has a short head, contracted suddenly in front of the eyes, and forming a small naked muzzle, divided by a longitudinal furrow; the ears are short and elliptical, naked inside, and directed forwards; the body long and slender; the tail bushy, and two-thirds of the length of the body, and the whole external form and appearance not unlike that of a *Ferret* or *Ichneumon*. The temporal *fossæ* are separated from the orbits by a complete rim of bone.



[Skull of Cynictis.]

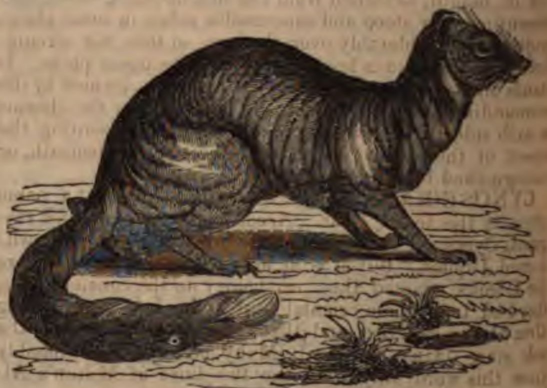
a, seen from above; *b*, profile of the same; *c*, half of cranium seen from below, showing the position of the teeth in the upper jaw · *d*, half of the lower jaw seen from above (from Mr. Ogilby's figure)

Example. *Cynictis Steedmannii* (Ogilby), named after Mr. Steedman, to whom zoologists are indebted for a knowledge of the animal.

Description.—Length of the head from the muzzle to the root of the ear, 2¼ inches; length of the ear, ¾ of an inch; breadth of the ear, 1¾ inch; length of the body from the muzzle to the root of the tail, 1 foot 6 inches; length of the tail, 1 foot; height at the shoulder, 7 inches; height at the croup, 7½ inches. Hair moderately fine in quality, much resembling that of a dog, smooth and close on the body, long and bushy on the tail. The general colour, as well as the whole external appearance, precisely that of a small *Fox*, bright red over the entire body, head, and extremities, deep and uniform on the back, but mixed with silvery grey on the cheeks, neck, sides, and tail, arising from a mixture of hairs tipt with grey, and dispersed through the fur of these parts. The breast, belly, and legs, unmixed red; and the tail, which precisely resembles the brush of a fox, covered with long bushy hairs of a sandy red colour at the roots, dark brown in the centre and grey at the points: the last two inches at the tip of the tail uniform dirty white. Hairs of the body not annulated as in *Herpestes* and the *Suricate*, and altogether of a finer and more furry quality. External form and appearance comparable with those of the *Ferret* and *Egyptian Ichneumon*, but probably standing higher on the legs as being more completely digitigrade.

Locality.—Uytenhage, on the borders of Caffraria. (Ogilby.)

Mr. Ogilby thus concludes his observations on this interesting animal:—'In consulting the works of travellers through the colony of the Cape of Good Hope, I have been able to find but two notices which seem clearly to refer to this animal; one by Dr. Sparrman, the other by Mr. Barrow. The first of these authors in the English translation of his 'Travels,' vol. ii. p. 184, has the following passage. "Two other small animals, which probably likewise belong to the *Viverra* genus, I had only a hasty glimpse of in this colony. The one we saw and gave chase to between the two Fish Rivers made its escape from us, however, by running into a hole underground, and seemed to be somewhat less than a cat, though longer in proportion. The colour of it was a bright red." It is true that this passage records no observation by which we can with certainty refer the animal to which it alludes to, the *Cynictis Steedmanni*, but the size, colour, and habitat are so perfectly similar in both cases, as to render their identity extremely probable. In the following extract however from Barrow's Travels, vol. i. p. 185, the characters are fully reported. "Upon these parched plains" (those of Camdebo, on the eastern confines of the colony) "are also found several species of a small quadruped which burrows in the ground, and which is known to the colonists under the general name of *Meerkat*. They are mostly of the genus of animals to which zoologists have given the name of *Viverra*. An eagle making a stoop at one of these, close to where we were passing, missed his prey, and both fell a sacrifice, one to the gun, the other to the dogs. Both the bird and quadruped appeared to be undescribed species. . . . . The *Viverra* was wholly of a bright chestnut colour; the tail shaded with black hairs, bushy, straight, and white at the extremity; ears, short and round; on the fore-feet, five, and on the hind, four toes; the body and tail each one foot long." 'There can be no doubt,' continues Mr. Ogilby, 'of the animal to which this description refers, a description more minute and accurate than we generally find in the works of travellers. It agrees in every point with the species which forms the subject of the present memoir



[Cynictis Steedmannii, from Mr. Ogilby's figure.]*

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* N. B. Cryptoprocta, Benn., described subsequently in 'Zool. Trans.' has five toes and claws on each foot. [Viverridæ.]

* Mr. Gray informs us that this animal has been described by Cuvier as Herpestes penicillatus, and by Mr. Smith as Herpestes Levaillantii.

, perhaps, in the reported dimensions of the tail and
but this difference most probably arises from the age
of the specimens, or from the measures of Mr. Barrow
taken in a straight line, whilst mine followed the
nt curvature of the head, neck, and body. The name,
kat, by which it appears this animal is known to the
sts, signifies a monkey, and is of very general accep-
in South Africa, being applied indifferently to the
t species, the *Cape Herpestes*, *Ground Squirrels*,
arious other small burrowing animals. Both the
es here quoted confirm the burrowing habits of the
lis Steedmannii, which I had already inferred from
m of the claws.'

NIPS QUERCUS. [GALLS.]

NOCE'PHALUS. [BABOON, vol. iii., p. 227.]

NOMORIA'CEÆ, an obscure order of Rhizanths,
uished from Balanophoraceæ by their distinct sta-
and the imperfect perianth of the male flowers. The
s represented by Cynomorium coccineum, the Fungus
nsis of the old herbalists, a plant once in repute for its
gent properties, but now valued only for its rarity and
tanical interest that attaches to it. Dr. Walsh tells
t 'it grows most plentifully on a detached rock on
uth-west side of the island of Gozo. It is there much
ated for its medicinal properties: the time of the dis-
of its virtues is not known, but, from some antient
it appears to have been at a very remote period. It
een the usage of Malta to banish to Gozo all females
onest character, and here, according to tradition, they
a vegetable substance of an astringent quality, which
very efficacious in removing the consequences of
rregular life. It was prepared in earthen pots, some
ch have since been dug up in various places, marked
'hœnician characters indicating their use. The plant
so applied by them to the purposes of divination. It
id between the breasts, and, from some accidental
stances of position, &c., they augured good or bad
e. This practice was reproved, and said to be finally
ed, by a Capuchin missionary. This curious vege-
vas subsequently esteemed as a remedy in dysentery,
curative powers were long held in very high repute.
the year 1740, the Knights of Malta set such a very
alue on this fungus, that they interdicted the ap-
of any person to the place where it grew, and guarded
ssage with the strictest jealousy. In April, when the
was ripe, it was carefully gathered by persons ap-
d for that especial duty, and the precious morsels
eposited in a government office, from whence some
s were sent as presents by the grand-master to dif-
sovereigns, and the remainder distributed among the
als of the island. Even after the English took pos-
of Malta, and succeeded to the territorial rights of
ler, and, amongst other things, to the possession of this
custode was appointed to take care of it as hereto-
ith a salary, which always makes an item in the
accounts of Malta. The fungus is thus continued to
arded and regularly gathered, deposited in the state-
and distributed among the hospitals; and when Dr.
ton, through the kindness of an official person in
was permitted to visit this rock, he was accompanied
custode. The rock, as shown by the doctor's sketch,
cult of approach: it is an isolated precipice, about 600
height, detached from the neighbouring shore, and
ting very steep and inaccessible sides, in some places
ting considerably over the sea, so that the circum-
of the base is less than that of the upper parts. It
on the verge of a noble circular basin, formed by the
nding cliffs, into which the sea enters by the chasms
h side of the fungus rock, the whole presenting the
of the crater of a volcano, raised from beneath, or
uished by the irruption of the sea.'

NOSU'RA (κυνὸς οὐρά, the tail of the dog), a name
to the lesser Bear. According to Aratus and Hy-
Cynosura was one of the nymphs of Mount Ida, who
Jupiter. But it is at least as probable that before
reeks adapted their mythology to the constellations,
d from some oriental source the habit of figuring
Minor as a dog, and that the tail of the dog was the
tar. [URSA MINOR.] Many persons may probably
this word only from the two lines of Milton's Al-

These lines have puzzled many, though the reference to the pole star and the property of the magnet gives the image a degree of fitness for poetry which the etymology of the word alone would hardly suggest.

CYNOSU'RUS CRISTA'TUS, a well-known pasture grass, called by farmers crested dogstail or gold-seed, exceedingly abundant in all natural and artificial grass land. It grows with a slender smooth stem to the height of one or two feet, and is terminated by a somewhat cylindrical spike-like panicle of short clusters of flowers; each cluster consists of two flowered spikelets resting upon pinnate bracts. The glumes are two, about the length of the florets; the paleæ 2, of which the lowest is sharp-pointed. The styles are feathery; the fruit is a small, yellow, smooth shining seed-like body, whence the common name of gold seed.

Although this grass forms so constantly a portion of all good pastures, it is chiefly on account of the fineness and closeness of its herbage that it is valuable, the quantity of hay that it produces being inconsiderable. Mr. Sinclair hence observes, that 'it is inferior for the purposes of hay, but admirably adapted for permanent pastures. The roots penetrate a great way under ground, from which circumstance it remains green after most other grasses are burnt by a continuance of dry weather. In irrigated meadows it arrives at a greater size than in any other situation.'

[Cynosurus cristatus.]

CY'NTHIA (Zoology), one of the subgenera into which Savigny has divided the *Ascididæ*. The subgenus *Cynthia* consists of those ascidians whose body is sessile, and which have the branchial sac plaited longitudinally, and the reticulation continuous. Their external envelope or test is coriaceous. The structure comes nearest to that of *Boltenia*. [BOLTENIA.] Example, *Cynthia Momus*. This Ascidian does not attach itself to rocks, but makes shift to float about in the Gulf of Suez by attaching itself to fuci and other submarine plants. (See Savigny's *Mémoire sur les Animaux sans Vertèbres*, Paris, 1816; and Mr. W. S. Macleay's 'Anatomical Observations on the Natural Group of Tunicata,' *Linn. Trans.*, vol. xiv. p. 527.) N.B. M. Latreille has used the term *Cynthia* to distinguish a genus of coleopterous insects.

CYPER'ACEÆ, an extensive natural order of glumaceous Endogens, having much the appearance of grasses, with which they are sometimes popularly confounded. They differ in their stems being usually solid, not hollow, and angular, not round; in the sheaths of their leaves not opening on one side, but forming perfect tubes when the stem is pulled through them; in their male florets having no paleæ nor any covering to the stamens except a single bract, while the bisexual florets have nothing more than a few hypogynous bristles superadded; and finally in their embryo being enclosed in the albumen, and not lying at one side of it. There are other distinctions besides these, but what have been mentioned are the most remarkable. A large proportion of the order bears the name of sedges, and hence the sedge family or tribe is given to these plants as their English appellation. They are mostly inhabitants of marshy or swampy grounds, a few are met with on dry upland pastures, and a good many are Alpine plants They

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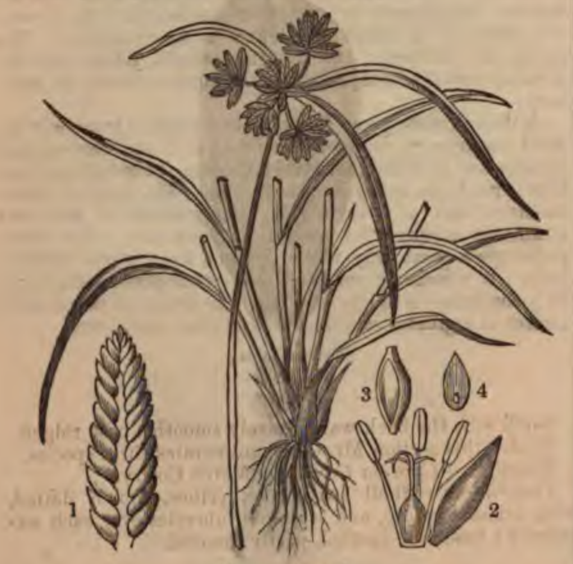
Where perhaps some beauty lies,
ae Cynosure of neighbouring eyes.

occur in all parts of the world, and are generally abundant; but little or nothing has been discovered of their uses; their most common application is to the manufacture of what are called erroneously rush mats and rush bottoms for chairs. The plant used in this country for such purposes is not any kind of rush, but the cyperaceous species, Scirpus lacustris. It is not a little remarkable, that nearly as these plants are allied to grasses, they scarcely at all participate in the nutritious quality of that useful order; it is only among the coarse bad herbage of marshes that they are allowed to form a constituent of hay.

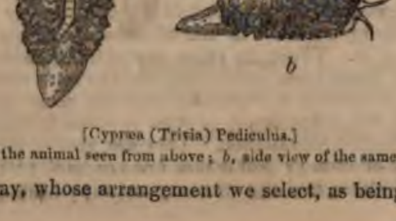


[Cyperus fuscus.]

1, a spikelet magnified; 2, a flower with its bract; 3, a fruit; 4, a section of a seed.

CYPRÆIDÆ. *Cowry Family.* *Cowries*, or sometimes, *Gowries*, *Porcellanen* of the Germans, *Porcelaines* (Porcelain shells) of the French. A family of marine gasteropodous mollusks, well known in commerce from one of the species (*C. Moneta*) being used in some parts of the East as a circulating medium. [COWRY.]

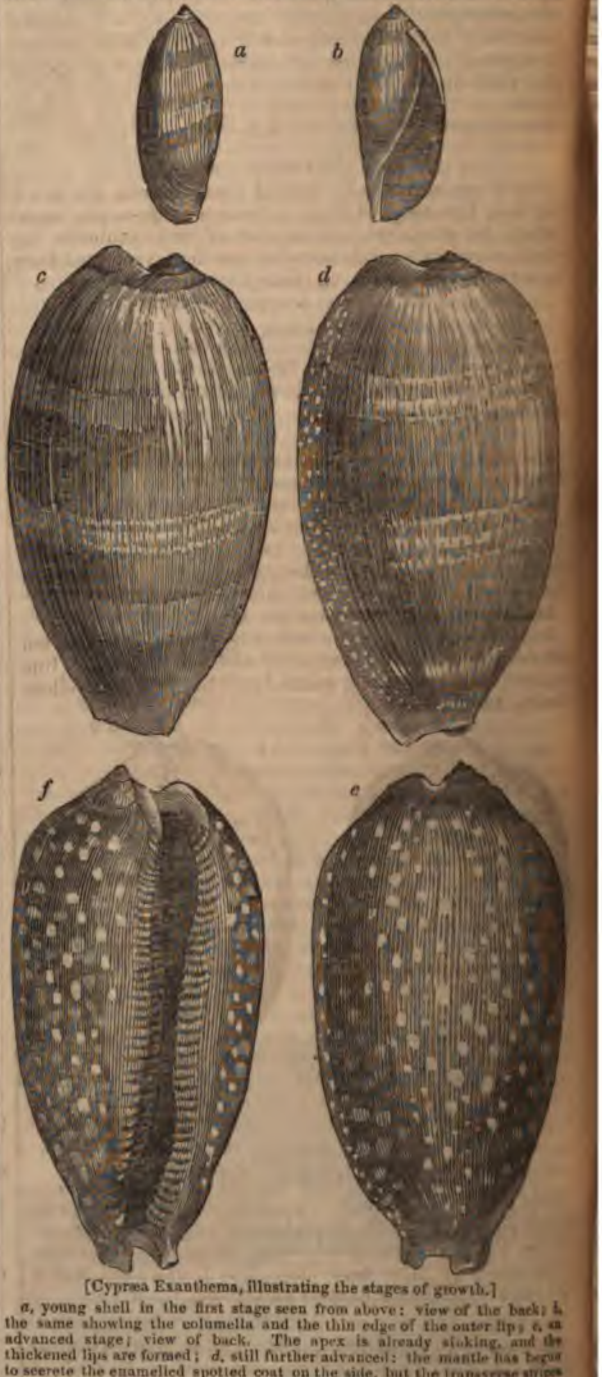
Family character. Animal unisexual, elongated; *head*, distinct, with two conical or subulate *tentacula* of some length, at the external base of which are situated the two sessile *eyes* on small projections; *mouth* vertical, at the bottom of a small cavity, and containing a lingual riband, or lamina, beset with tentacles and prolonged in the abdomen. *Branchial cavity* open, situated near the back of the neck; gills arranged in a longitudinal pectinated series on the inside of the columella on the left side of the mantle; siphon very short, and formed in the mesial line by the edges of the two lobes. *Mantle* bilobated, the lobes very large with extended aliform edges, capable of being reflected over the back of the shell so as to join on the mesial dorsal line. *Foot* oval, elongated, very large. *Vent* at the extremity of a tube behind the branchial cavity. *Male organ* situated more forward, and communicating with the orifice of the deferent canal by means of a furrow. *Adult shell* involute, highly enamelled, oval or oblong, more or less rounded or cylindrical with a small and imbedded spire; aperture longitudinal, nearly straight, toothed, or plaited, on each side, with a channel or groove at each end, inner lip flattened or sub-concave, outer lip involute. No *operculum*.



[Cypræa (Trivia) Pediculus.]

a, the animal seen from above; *b*, side view of the same.

Mr. Gray, whose arrangement we select, as being, in our opinion, the best which has hitherto appeared, thus notices the very great change of form that the young shell undergoes in its progress to perfection. 'The shell alters its appearance considerably, according to the age of the individual, and exhibits three very distinct stages. In the young or first stages, which are figured in 'Ency. Méthod.,' t. 349, f. *a. b.*, 'Mus. Gotwald,' viii. t. 53, *b. e.* 65, *a. f.* 66, *a. c.*; the shell is generally smooth, of a plain greyish colour, or with three longitudinal bands, and the upper part of the *inner lip* is smooth, convex, the lower part flat or concave; the *outer lip* thin. In the second stage the shell begins to assume more the character of the genus, as the outer lip begins to be inflected or rather thickened, and approaches nearer the perfect appearance of the species as the second coat of colour is deposited; but differs from it in the want of thickness of the shell and the spire being more distinct, and in the want of the dorsal line, which is usually distinct in the third or perfect state, where the last coat has been deposited*, and



[Cypræa Exanthema, illustrating the stages of growth.]

a, young shell in the first stage seen from above: view of the back; *b*, the same showing the columella and the thin edge of the outer lip; *c*, an advanced stage; view of back. The apex is already sinking, and the thickened lips are formed; *d*, still further advanced: the mantle has begun to secrete the enamelled spotted coat on the side, but the transverse stripes are still visible; *e*, the perfect shell; all traces of the transverse stripes lost under the enamelling of the thickened spotted coat; *f*, view of under side of the perfect shell.

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* By the mantle.

ture is more plaited on both sides. The colouring,
st, the disposition of the colouring here, is a much
ertain characteristic of species than either the
outline of form or size, the latter of which is ex-
y various. In this family I have often observed
n specimens of *C. Arabica* from one to three inches
nis peculiarity is attempted to be explained by
and others, who assert that when the animal has
a complete shell, as it has not the faculty of en-
its size, it is obliged to quit its shell and form a
, in the same manner as the *Annulosa* cast their
nd by that means the same animal forms many
out I believe there is not the slightest ground
notion.'

ray has recently observed, that sometimes, though
he young shells of *Cypræa*, especially *C. Arabica*,
inner edge of the outer lip thickened and fur-
rith a compressed sharp-edged series of teeth.

aphical Distribution, Habits, &c.—Cypræidæ
oth in the old and new world, but their greatest
nent both in point of size and number of species
ace in warm climates. A very few species are in-
s of the European seas The family are littoral,
generally found under stones or rolled corals.

Genera CYPRÆA (Cowry).

ic character.—The young shell smooth, the adult
h lips toothed; the anterior and posterior canal
recurved; the front end of the columella lip
edged by a single large oblique fold, separated from
by a deep groove. (Gray.)

*

Sub-genus. 1.

Cypræa.

ont of the columella broad, deeply impressed; *shell*
mooth.

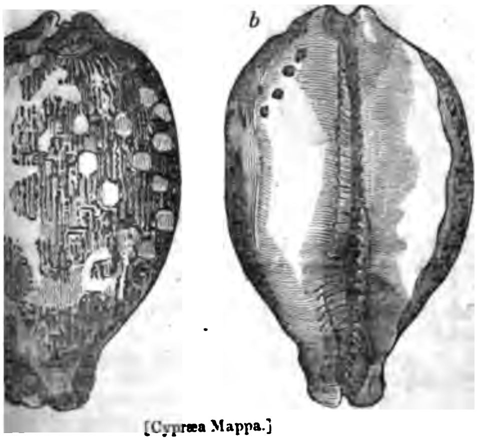
a.

smooth; columella-pit transversely ridged; teeth
lip generally long. (Gray.)*

this division of the sub-genus Mr. Gray arranges
even species, including some of the rarest forms,—
Aurora (the Morning Dawn, or Orange Cowry),
ræa Princeps, for example,—together with *Cypræa*
he Tiger Cowry), and other common species.

ple.—*Cypræa Mappa*, the Map Cowry.

ption. Shell more or less ventricose, ovate, varied
brown or yellow lines, and spots. Dorsal line
d. Margin thick, spotted with black; teeth yellow.
Indian Ocean.



[Cypræa Mappa.]

a, seen from above; *b*, seen from below.

are many varieties, among which the rosy variety,
variety, from the Pearl Islands; the citron variety;
dwarf rich-mouthed variety from the Mauritius,
arest or most beautiful. The young shell is of a
our with obsolete spots and dashes.

β.

smooth; columella pit (nearly) smooth; teeth of
short or indistinct.

r this division of the sub-genus Mr. Gray arranges
pecies.

Example.—*Cypræa Talpa*, mole cowry; Sardonyx Cowry of Gray.

Description.—Shell oblong ovate, subcylindrical, yellowish, with three darker bands; the subangular base and teeth brown or black; mouth pale. There is a variety (*Exustus*) shorter, darker, and with the teeth smaller and closer.

[Cypræa Talpa.]

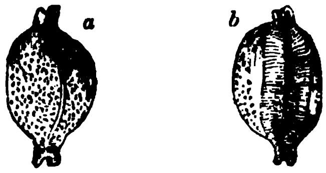
γ.

Shell with the back warty (rarely smooth), base ridged.

Under this section Mr. Gray enumerates three species.

Example.—*Cypræa Cicercula*, Vetch Cowry.

Description.—Shell subglobose, yellow, brown dotted, with a dorsal groove, and scattered tubercles over each extremity; base four-spotted, partly grooved.



[Cypræa Cicercula.]

a, seen from above; *b*, seen from below.

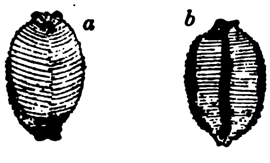
There is a larger variety which is more oblong, smooth, and is without the dorsal groove (*C. Globulus*).

δ.

Shell with transverse ribs.

Only two species are enumerated by Mr. Gray, and one of these, *C. rugosa*, Brod., is fossil.

Example.—*Cypræa Childreni, Children's Cowry*, Gray.



[Cypræa Childreni.]

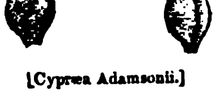
a, seen from above; *b*, seen from below.

ε.

Shell with longitudinal and transverse ribs.

One species only, Cypræa Adamsonii Gray; Adamson's Cowry, very rare.

Description.—Shell ovate; pear-shaped, white, brown mottled. Locality, Pacific Ocean? (Gray).



[Cypræa Adamsonii.]

* *

Sub-genus 2.

Aricia.

Front of the columella flat, or nearly so; back of shell smooth.

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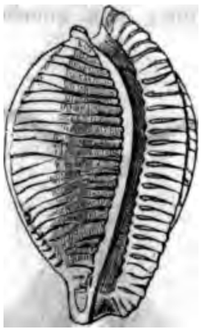
scriptions are throughout almost entirely Mr. Gray's, as well as
ement.

a.

Margin of the shell pitted on the upper edge. Fourteen species.

Example.—*Cypræa guttata*, Gmel. Blotched Cowry, Gray.

Description.—Brown, pale spotted, base and margin white, brown-ridged: a beautiful and rare species. Locality, Red Sea? (Gray).



[Cypræa (Aricia) guttata.]

β.

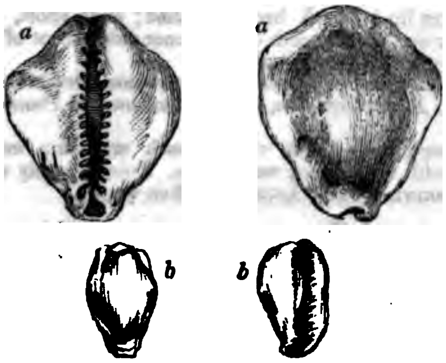
Margin entire; teeth of both lips extended more or less over the base. Thirty-seven species.

Example.—*Cypræa Moneta*, Linn. Money Cowry.

Description.—Shell yellow or white, with a yellow ring; margin and base tubercular; teeth of inner lip moderate.

Varieties.—*a.* Without a ring; *b.* with the margin and base less tubercular. [Cowry.]

Young.—Whitish with two dark bands. (*C. icterina*, Lam.)



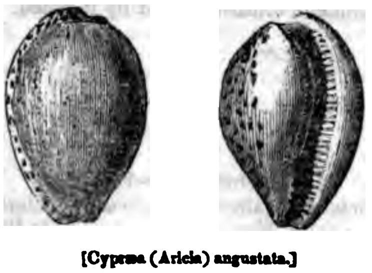
[Cypræa (Aricia) Moneta.]
a, adult; *b*, young.

γ.

Margin entire; teeth of inner lip very small, forming a slight ridge; front of columella lip slightly concave, produced, and toothed internally. Two species.

Example.—*Cypræa angustata*, Gray.

Description.—Shell whitish brown, minutely brown dotted; base white; margin closely black dotted, ends blackish. Worn plain brown, varying in darkness. Locality, New Holland.



[Cypræa (Aricia) angustata.]

Sub-genus 3.

Naria.

Front of the columella narrow dilated into a sharp-toothed ridge; shell smooth.

One species only, *Cypræa irrorata*, Gray.

Description.—Shell ovate, purplish, yellow dotte white, flat; teeth large. Locality, South Seas. Mo to *C. Felina*, variety 1.

[Cypræa (Naria) irrorata.]

LUPONIA.

Shell like Cowry, but front end of the colum crossed by several irregular ridges, without any marginal one, internally narrow, flat; shell pear- smooth, or cross-ribbed.

Five species. Example, *Luponia Algoensis*, Al pon, Gray.

Description.—Shell pale, brown dotted; base teeth of inner lip very small; margin black dotted. with the teeth more or less obliterated. Locality, Good Hope.

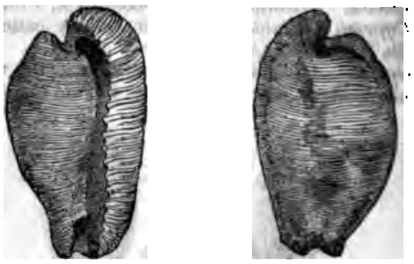
[Luponia Algoensis.]

CYPRÆOVULA.

Like Cowry, but front end of columella covered gular cross-ribs, like rest of base, internally produc an acute-toothed ridge. Shell pear-shaped, cross-ri

One species, *Cypræovula Capensis*, Cape Cypr Gray.

Description.—Pale brown; ribs very thin, co sharp. Locality, Cape of Good Hope: very rare.



[Cypræovula Capensis.]

TRIVIA.

Like *Cypræovula*, but front of columella internal cave, ribbed. Shell subglobular, cross-ribbed.

a.

Mouth wide; outer lip slightly inflexed; shell ribbed.

Five species. Example, *Trivia carnea*, Flesh *Pig*, Gray.

[Trivia carnea.]

Description.—Shell oblong, thin, pellucid, pur coloured, with very thin, distant, continued rib whitish. Varies with an indistinct dorsal groove.

Mr. Gray observes, that *Pig* is the common n these shells on the coast, and that they are called in Italy. He adds, that *Porcellain*, the common n s, is taken from the fancied resemblance of these o pigs, and refers to Fabius Columna, &c.

β.

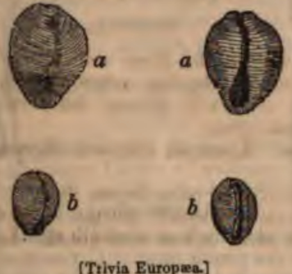
th narrowish; outer lip wide; ribs of back subequal,

teen species. Example, *Trivia Europæa, European* ray; *Cypræa Europæa*, Lam.

ription.—Shell ovate, subglobose, ash or flesh-co- with three black dots, and a whitish dorsal streak; se, rather thick, whitish; base white; outer lip wide.

ety.—Back spotless, with an indistinct dorsal groove. *a Arctica*, Mont.)

ng white and smooth.



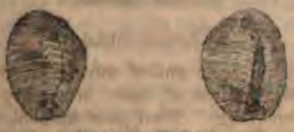
[Trivia Europæa.]
a, adult; b, young.

γ.

th narrowish; the outer lip arched; the ribs en- or tubercular near the dorsal groove.

n species. Example, *Trivia Pediculus*, Louse Pig, *Cypræa Pediculus*, Linn.

ription.—Shell ovate, pale reddish, with six square, lorsal spots; ribs rather thick, subrugose, crowded; ine narrow; base reddish. Locality, West Indies.



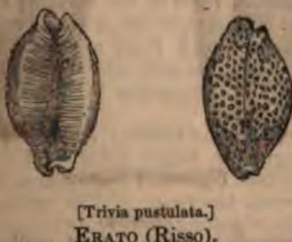
[Trivia Pediculus.]

δ.

th narrow; ribs tubercular; dorsal line distinct; f columella smooth.

species. Example, *Trivia pustulata, Pimpled Pig, Cypræa pustulata*, Lam., commonly called by col- the Small-pox Cowry.

ription.—Purplish-brown; ribs studded with red- black-edged warts. Locality, Pacific Ocean.



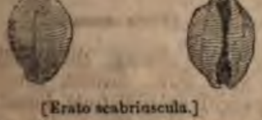
[Trivia pustulata.]

ERATO (Risso).

conical; apex sub-mamillary, blunt; shell, when smooth; the adult with both lips finely crenulated; umella concave slightly radiatedly plaited or smooth, o or three folds in front; the anterior canal straight, der indistinct.

n species. Example, *Erato scabriuscula, Roughish hell*, Gray, *Marginella Cypræola*, Sow.

ription.—Shell ovate, turbinate, livid, purplish, mi- tubercular; spire conical; dorsal line impressed; wide, whitish, inner lip largely plaited its whole teeth large, young, smooth; lip thin, toothless. Lo- South Pacific, St. Elena.



[Erato scabriuscula.]

um (Ovula, Lam., commonly called Poached Eggs).

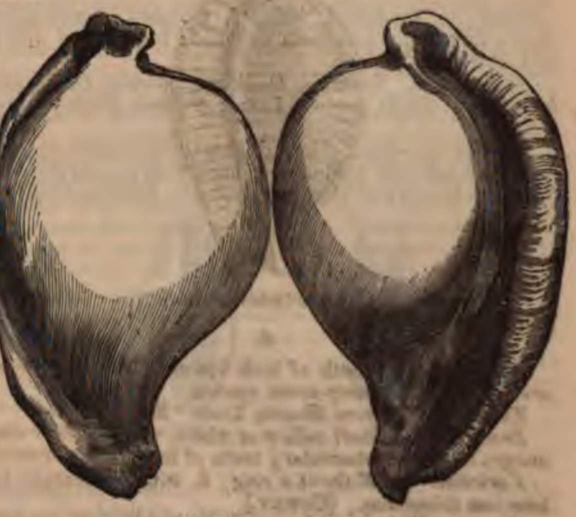
Generic Character.—The shell, when young, spirally striated; when adult, covered with a smooth enamelled coat; the inner lip toothless; the outer toothed or crenated; the anterior and posterior canal more or less elongated.

α.

The outer lip broad, inflexed, rounded, crenulated; extremities short; front of columella rounded.

Of this subdivision Mr. Gray enumerates two species. Example, *Ovulum ovum, Ovula oviformis*, Lam.; *Bulla ovum*, Linn., *Common Poached Egg*.

Description.—White; back rounded; inside orange-brown.



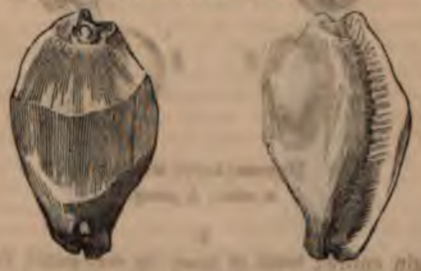
[Ovulum ovum, adult.]

β.

Outer lip inflexed, broad, toothed; ends short, curved; hinder end with a tooth on the inner side; front of the columella expanded beneath.

One species only, *Ovulum verrucosum, Ovula verrucosa*, Lam.; *Bulla verrucosa*, Linn.; *Two-warted Poached Egg*, Gray.

Description.—Shell ovate; back angular; extremity rosy, with a depressed wart above. Young closely striated; ends brown-edged. Locality, Indian Ocean.

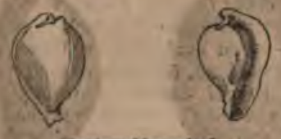


[Ovulum verrucosum.]

γ.

Outer lip inflexed, rounded, narrow, toothed; rest like sect. β.

Four species. Example, *Ovulum Margarita*, Sow.; *Pearl Poached Egg*, Gray. Shell ovate, subglobose, white, pointed in front, ventricose; base convex; hinder tubercle rugose; front of columella concave; outer lip rounded. This with six brown dots artificially made is *Ovula punctata* of Duclos, Bull. Sci.; Guerin Mag. 27. Locality, Friendly Islands.



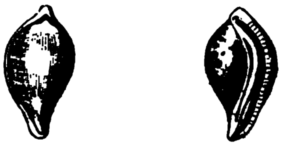
[Ovulum Margarita.]

δ.

Outer lip slightly inflexed, narrow, keeled externally, with edge shelving inwards; the rest like the former.

Seven species. Example, *Ovulum pyriforme*, Sow.; *Pear-shaped Poached Egg*, Gray.

Description.—Shell pear-shaped, yellowish-white, attenuated in front; front of columella concave; outer lip shelving inwards. Locality, New Holland.



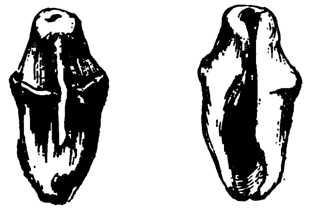
[Ovulum pyriforme.]

ε.

Outer lip thickened, inflexed, toothless; extremities short; front of the columella flattened; hinder part with a fold, obliterated by age.

Nine species. Example, *Ovulum gibbosum*, *Ovula gibbosa*, Lam.; *Bulla gibbosa*, Linn.; *Gibbous Poached Egg*, Gray.

Description.—Shell oblong, blunt, white; margin yellow, covering nearly the whole shell; back with an angular rib. Varies in length and breadth. Locality, Atlantic Ocean.

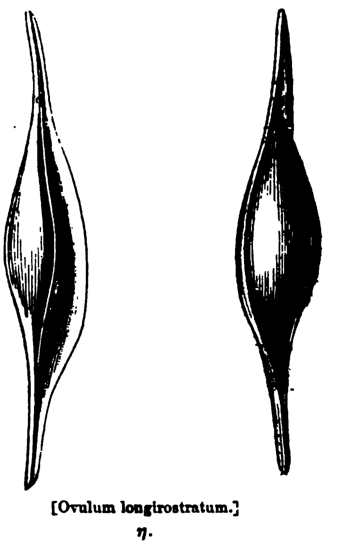


[Ovulum gibbosum.]

ζ.

Outer lip thickened, inflexed, toothless, extremities rather elongated; the hinder conical, straight; the rest like the former.

Four species. Example, *Ovulum longirostratum*, Sow.; *Goodhall's False Spindle*, Gray. Shell fusiform, white, thin; beak very long, curved; mouth linear, rather expanded in front. Locality, Adriatic.



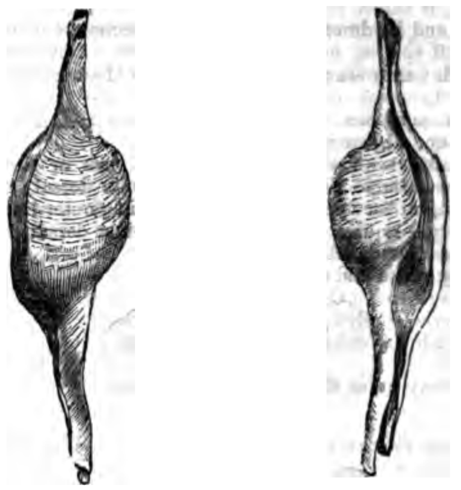
[Ovulum longirostratum.]

η.

Outer lip thickened, slightly inflexed, toothless; the front of the columella rounded, the extremities very long. (Volva, De Montf.)

One species only, *Ovulum Volva*, *Ovula Volva*, Lam.; *Bulla volva*, Linn., Common Weaver's Shuttle.

Description.—Shell oval, flesh-coloured, striated; outer lip pink; the beaks long, flexuous. Locality, China.*



[Ovulum volva.]

Place in the Animal Series.—Lamarck places *Cypræa* between *Ovula* (*Ovulum*),—which is immediately preceded by *Marginella* and *Volvaria*,—and *Terebellum*, *Ovulum* being the first genus of his *Enroulées* (Involute Trachelipods). Cuvier arranges the genus between *Conus* and *Ovula*, (which last is immediately succeeded by *Terebellum*,) in his third family of pectinibranchiated gastropods or *Buccinoidea*. De Blainville's position for the Cowries is in his third family, *Angyostomata*, of his *Paracephalophora Dioica*, between *Peribolus* (which almost all agree to be a genus established on the young form of *Cypræa*) and *Ovula*, *Peribolus* being preceded by *Marginella*, and *Ovula*, the last genus of his first order, *Siphonobranchiata*, being succeeded by *Trochus*, the first genus of his first family *Goniostomata*, of his second order of *Paracephalophora Dioica*, viz., *Asiphonobranchiata*. Rang, in his Manual, places *Cypræa* (including *Peribolus*) between *Oliva* and *Ovula*. In Deshayes's Tables, the genus stands between *Ovula* and *Oliva*.

Mr. Gray (*Zool. Journal*, vol. i., p. 73) says, 'This family appears to be allied to the subfamily *Cassideæ*, amongst the *Buccinöideæ*, by means of the *Cassis Testiculus*, of which Lamarck observes, "ce casque a un peu l'aspect de certains Cypræa;" but the affinity is not slight, for in the shape and form of the aperture, which has a groove or canal at each end, both of the lips plaited, and the front part of the columella flattened, it accords with those *Cypræa*: but the outer lip is not inflected, nor is the back of the shell covered with a china-like coat, but with epidermis, and the canal in front of the aperture is recurved. The *Ovulæ* on the opposite side the family, have certainly great affinity to the *Bullideæ* (Bullidæ), as is pointed out by Linnæus, who places them all in that genus, but *Bulla* differs most essentially from them; in the animals by the position of their branchiæ and their being half hermaphrodite, and in the shell by the aperture being rounded and quite entire at each end, and the edges not being thickened, nor the back covered with a shelly coat, for the shell is here covered with the soldered reflected lobes of the mantle; the connexion is most apparent by means of *Ovula patula* and *Bulla Naucum*, in the latter of which there are some slight appearances of a curved canal at each end of the aperture, as in the character of the *Cypræideæ* (Cypræidæ), but it has not the enamelled back.

'This family has some analogy in their polished coats, first to the *Marginellæ*, which induced Montagu to call a species of that genus, *Cypræa Voluta*; and, indeed, such is the affinity between the young of this species, which has been called *Bulla diaphana*, that Dillwyn has considered it as the young of *Cypræa Europæa*; in which Montagu appears also to have coincided, until he observed a totally different construction in the animal: but I believe that *M. persicula* is the most analogical species of this genus; and secondly, to the *Olivæ*, which differ essentially in having an operculum, and all the characters of the *Buccinoideæ* (Buccinidæ).'

These observations were written before a more extended examination enabled Mr. Gray to propose the natural arrangement including the genus *Ovulum*, which we have given above from his monograph; but we have laid them before the reader because they contain many useful remarks.

Fossil Cypræidæ.

Fossil shells of this family do not appear to have been found below the Supracretaceous group. Mr. G. B. Sowerby speaking of the genus Cypræa (Genera) says, 'of these,' the fossils, 'we have several species in Britain, in the London clay and crag; many others are found on the Continent, as in the calcaire grossier in the environs of Paris; at Laugnan, near Bordeaux, and in Normandy; also

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* The reader should also consult Mr. G. B. Sowerby's monograph of the genus Ovulum in his Species Conchyliorum.

and Piedmont; we have seen specimens of a very
sil species, nearly resembling *C. mus*, from the Ne-
ds: they seem to be confined to the newer forma-
Lamarck enumerates eighteen fossil species of
a, and two of *Ovulum*. Deshayes, in his Tables,
the number of living *Ovula* eighteen, and the num-
fossil (tertiary) species six. Three species, *O. Spelta*,
stre, and a new species he makes both fossil (tertiary)
ing in the Mediterranean, the Indian Ocean, and the
rranean respectively. The number of living species
æa he makes 138, and the number of fossil (tertiary)
e considers *Cypræa lurida* (Medit.), *rufa* (ibid.),
s (African Ocean), *Coccinella* (European Ocean), *a*
ecies (Sicily), and another *new species, Sphæriculata?*
with an unknown habitat, as both living and fossil
y).

Gray notes the following as fossil:—

Cypræa.

ræa Physis, Brocchi (*C. Pyrula*, Lam.), Plaisantin or
tin; *C. leporina*, Lam.; *C. gibbosa*, Gray; *C. tumi-*
König, Bordeaux: and he observes, that *C. annularia*,
, appears to be an allied species; *C. fragilis*, Gray;
hayesii, Gray; *Ovula tuberculosa*, Duclos; *C. in-*
Lam., Grignon, allied to *Ovulum; C. subrostrata*,
Nehove; *C. fabagina*, Lam.; *C. diluviana*, Gray;
osa, Brod., Turin.

Luponia.

legans, Gray; *Cyp. elegans*, Defr.; *L. dactylosa*,
Cyp. dactylosa, Lam.; *Cyp. Gervillii*, Sow.; *Cyp.*
ii, Defr.

Trivia.

Barcinensis, Gray; *Cyp. Barcinensis*, König, Bar-
; *T. sphæriculata*, Cyp. Lam.? Italy; *T. acuticos-*
Gray, Italy; *T. pediculöides*, Gray, Italy; *T. Por-*
Gray, Crag? *T. Bronnii*, Gray, Italy; *T. solida*,
T. avellana, Sow., M. C., Suffolk Crag, which, Mr.
bserves, appears to be an allied species; *T. Duclo-*
Gray.

Erato.

entricosa, Gray, Italy.

Ovulum.

ethesii (*Leathesii?*), Sow., M. C.

Gray makes the whole number of species of *Cy-*
e, including the subgenera above indicated, and the
s well as the living species, 174. If *Cyp. nivosa*,
is to be considered as a well-established species dis-
om *Cyp. Dama*, as Mr. G. B. Sowerby (*Zool. Journ.*,
p. 220) and others contend, the number will be 175,
d *C. Broderipii*, Gray, be not also a variety of *C.*
as Mr. Gray says it perhaps may be. To these are
dded eight living species recorded by Mr. Gaskoin,
e by Mr. Reeve, in the *Zoological Proceedings for*
s hitherto undescribed; and *C. umbilicata*, Sow.,
d it be not a variety of *C. pantherina*, as Mr. Gray
t to be, but which Mr. Sowerby does not allow, con-
g it an established species more nearly allied to *C.*
ina than *C. Tigris*.

uclos has long promised a monograph of this family,
as not yet appeared.

RESS. [CUPRESSUS.]

RIA'NUS, ST., THA'SCIUS CÆCI'LIUS, one
most eloquent of the Latin fathers, was archbishop
hage towards the middle of the third century. The
d dates relating to the early portion of his life are
by different writers with a variation which occasions
inty. He was probably born about A.D. 200, at
ge, where, before his conversion to Christianity, he
d considerable affluence as a teacher of oratory,
o indispensable to success in all public affairs,
e ignorance of the great mass of the people, and
sequent facility and necessity of operating upon
y rhetorical artifice and arguments addressed to
sions—expedients which Cyprian, in the exercise
episcopal office, appears to have duly appreciated,
ay judge by the florid style of his declamations,
frequent recourse to the authority of celestial
and miraculous events. His career as a Christian
not to have exceeded ten or twelve years; for it
until about the fiftieth year of his age that he
ned over to the church of Carthage by Cæcilius,
ter, whose name he henceforth adopted. On his
on, he sold his mansion and estate for the benefit of the poor, and observed, in his mode of life, the most ascetic severity. It is stated, however, that, from some unexplained circumstance, he afterwards became repossessed of his property. Having held for two years the office of presbyter, to which he was elected on his joining the Christian community, he was importuned by the people to become their bishop, in opposition to several other presbyters who sought the promotion, and he is said to have been shut up in his house by the assembled populace, who barricaded all the outlets to prevent his escape, which in vain he attempted to make at an upper window. He was consequently installed archbishop of Carthage; but the persecution under the Emperor Decius having soon afterwards commenced, Cyprian fled, and so closely concealed himself during about a year and a half, that the place of his retreat appears never to have been known. This flight and long desertion of his flock occasioned much scandal against the church, and caused the clergy of Rome to address those of Carthage on the subject. (Cypr. *Epis.* 2.) The plea anxiously alleged by the archbishop and his apologist Pontius is an especial revelation from God in a vision. ('Deus secedere me jussit,' *Epis.* 9.) That this was a fiction is shown in *Epis.* 5, where one Tertullus is made responsible for the advice ('à Tertullo ratio reddetur'). When the persecution was abated, Cyprian, having suffered only proscription and the confiscation of his property, returned to Carthage, and being reinstated in his bishopric, he held several councils, at one of which 85 bishops attended to legislate concerning the rebaptizing of heretics, apostates, and deserters, who, after escaping the severity of Decius by renouncing their religious profession, desired to be re-admitted into the church. On the renewal of the persecution, about six years afterwards, by the Emperor Valerian, Cyprian was brought before the proconsul Paternus, with nine bishops of Numidia, who were condemned as profane disturbers of the peace, and sent to work in the mines. Cyprian was banished to Curubis, about 40 miles from Carthage. By Galerius, the successor of Paternus, he was restored to his former dignities; but on his refusal to sacrifice to the pagan deities in obedience to the emperor's commands, he was seized by a band of soldiers, and was sentenced to be beheaded as an enemy to the gods, and a dangerous seducer of the people. He was led from the proconsular palace of Sextus to an adjoining field surrounded with trees, which were filled with thousands of spectators, in the midst of whom he submitted with much fortitude to his sentence. That the populace must have experienced a great reversion of sentiment towards their archbishop since they constrained his acceptance of office, is evident from this acquiescence in his death, and from the fact that, previous to this event, they loudly demanded in the theatres that he should be thrown to the lions. This change arose apparently from the harsh and ascetic austerity of Cyprian in denouncing not only idolatry and licentiousness, but the reasonable and natural gratification of the passions.

His writings are numerous and valuable, as containing much curious and important information concerning the doctrines and discipline of the primitive church: they consist of two kinds, epistles, and tracts or sermons. Of the former there are 83, many of which appear to have been written during the eighteen months of his concealment. The following few notices will show the kind of subjects to which these epistles relate. In the one to Donatus he relates, with much rhetorical embellishment, the circumstances of his own conversion, and shows the advantages of monastic seclusion and abstinence. In that to his priests and deacons he gives advice about escaping from persecution. The one to Cornelius contains passages of much importance to the apologists of the church of Rome, in which are mentioned, 'Petri cathedra atque ecclesia principalis unde unitas sacerdotalis exorta est.' The epistle to Fides contains the judgment of Cyprian and a council of bishops in favour of infant baptism. Another to Magnus on the same subject asserts that sprinkling is no less efficacious than dipping. One to Pomponius reproves the licentious abuses of monachism, and the prevalent custom of virgins living with the clergy, ostensibly for pious instruction, but really for indulgence in fornication. An epistle to Cæcilius is important as insisting upon the absolute indispensableness of mixing water with the eucharistic wine. In some antient MSS. three epistles are given besides the above-mentioned number, one of which, from Pope Cornelius to St. Cyprian, is replete with abuse and insolence.

The following are the principal tracts of Cyprian: *De Lapsis*, that is, concerning those who, from persecution, had lapsed into idolatry. The miraculous stories related in this discourse are such as in the present day would be regarded as pure falsehoods. (See Dr. Middleton's *Inquiry*, p. 112.) *On the unity of the church:* this is a treatise which both from the Roman and English hierarchy has received especial attention. It strongly denounces all schismatic separation, declaring that there is no crown, even for martyrdom, out of the pale of the true church.

The discourse *On Mortality* was written at the time of a dreadful plague, which for several years devastated the Roman empire. It shows the lamentable want of a due estimate of the value of life which distinguished the religious enthusiasm of that age. All here below is represented as a course of unmitigated misery and suffering, felicity being attainable only in heaven above; a Christian, says Cyprian, should therefore be thankful for any kind of death. The *Exhortation to Martyrdom* consists of twelve classes of scriptural passages exhibited to encourage and stimulate the faithful in submitting to tortures and death. The treatise *Against the Jews* is also a series of texts, quoted and verbally applied, as usual at that time, without any regard to the sense of the context. In the tract *On the Dress of Virgins* (De Habitu Virginum) many facts are mentioned which illustrate the social state of those times. A severe denunciation is directed against the passion among rich and youthful females for immodest attire, extravagant ornaments, the use of paint and cosmetics, and the dyeing of black hair a flaxen yellow in imitation of the Germans. The immoral habits of unmarried women appear to have furnished an especial subject for the sermons not only of Cyprian, but of all the primitive fathers. Besides a discourse on the Lord's Prayer, which has received high commendation, there are four which are considered to be wrongly ascribed to St. Cyprian; one is a turgid declamation in praise of martyrdom; the second is on Chastity; and the other two against Theatres, and against the heretic Novatian. The style of Cyprian much resembles that of his master and favourite author Tertullian. He treats the same subjects in the same manner, and though his language is more artificial, it is similar in harshness and occasional barbarisms. His eloquence is admired, however, by Jerome and even by Lactantius. In credulity he appears to have had but few equals, if indeed he believed all the miraculous stories he relates; for besides his own continual visions, he seriously appeals not only to the deeds of demoniacs or rather maniacs, and to the dreams of poor and ignorant women, but to the revelations of 'little boys full of the Holy Ghost.' (Epist. 9.) That St. Cyprian's visions happened generally to authorize some act of episcopal power unapproved by his clergy and people is indeed a fact which cannot but suggest a doubt of their reality.

There are several good editions of his works, among which may be mentioned that of the 'Opera Omnia,' Oxford, fol., 1682, and Amsterdam, 1700; but the editio optima is that of Paris, in fol., 1726. The following translation of the whole is in general accurate and faithful: 'The genuine Works of St. Cyprian, with his Life, as written by his Deacon Pontius, all done into English from the Oxford edition, and illustrated with notes, by Nathaniel Marshall, LL.B.,' fol., 1717. The whole works and life have also been translated into French, by Lombert, 1682. Translations of separate tracts are very numerous. That *On Mortality*, with others, is Englished by Elyot, 1534; by Brende, 1553; by Story, 1556; and by Lupset, 1560. *On the Lord's Prayer*, by Paynel, 1539. *On Virgins*, by Barksdale, 1675. *On the Unity of the Church*, by Bishop Fell, 4o., 1681; and by Horsburgh, 1815. (Watt's *Bibliothec.*) The life and martyrdom of Cyprian, by Pontius, his intimate friend, is still extant, and printed in several editions of the 'Opera Omnia;' but the style is too rhetorical for simple truth. The substance of this account is given in Lardner's *Credib.*, vol. iii. The *Lives of the Saints*, by the Rev. Alban Butler, (vol. ix., p. 172,) contains an elaborate biography of Cyprian. See also Dr. Adam Clarke's *Succession of Sacred Lit.*, vol. i., p. 177; Cave's *Hist. Lit.;* Le Clerc's *Biblioth.;* Tillemont and Bollandus.

CYPRICA'RDIA. [SUBMYTILACEA.]

CY'PRINA. [VENERIDÆ.]

CYPRI'NIDÆ, a family of fishes, of the section Malacopterygii Abdominales, the species of which are distinguished by their having the mouth small, formed by the intermaxillary bones, and generally devoid of teeth; the pharyngeans furnished with strong teeth, the branchiostegous rays few in number, and the scales generally of large size.

The principal genera belonging to this family are—*Cyprinus*, *Barbus*, *Gobio*, *Tinca*, *Cirrhinus*, *Abramis*, *Labeo*, *Catastomus*, *Leuciscus*, *Gonorhynchus*, *Cobitis*, *Anableps*, *Pæcilla*, *Lebias*, *Fundulus*, *Molinesia*, and *Cyprinodon*.

The genus *Cyprinus* (as now restricted) contains the common carp and allied species, which are distinguished from those of the other genera above enumerated, by their having one long dorsal fin, a small mouth devoid of teeth, the scales of large size, and the second rays of the dorsal and anal fins large, bony, and more or less serrated; branchiostegous rays three in number.

The common Carp (*Cyprinus Carpio*, Linn.) was introduced into this country at an early period (probably between the fourteenth and fifteenth centuries), but neither the date nor the country from which it was imported are precisely known. In Jenyns's 'Manual of British Vertebrate Animals' it is said to be originally from the middle of Europe; and since it thrives best in this part, such is probably the case. It now inhabits most parts of Europe, and in some places its growth is much attended to for the purposes of traffic. It frequents lakes, ponds, and rivers; in the last however it avoids those parts where the current is strong, preferring still water.

The food of the carp consists chiefly of vegetable substances, which are masticated by means of the flat teeth which are situated on the pharyngeans; the larvæ of insects and worms however also afford it nutriment. This fish is of an elongate form, and rather thick; the back is considerably elevated, and the greatest depth of the body, which is beneath the commencement of the dorsal fin, measures rather more than one-third of the entire length: the head is large, and the mouth small in proportion; the lips are furnished with two barbules on each side, situated near the corners of the mouth: the dorsal fin commences in a line with the end of the pectorals, and occupies a space nearly equal to one-third of the entire length; the first ray is short and bony; the second is also bony but long, and serrated on the hinder part; the third ray is the longest, and is flexible, as are likewise the remainder of the rays: the anal fin terminates in a line with the dorsal, and, like that, has the two foremost rays bony, and the second serrated the pectoral fin has its origin immediately behind the free edge of the operculum; the caudal fin is forked, and the longest rays are double the length of those in the centre. The number of fin-rays are—dorsal, 22; pectoral, 17; ventral, 9; anal, 8; and caudal, 19. The lateral line is straight.

The general colour of the upper parts is a rich olive-brown, which is darkest on the head; the under parts are yellowish-white, and the fins are brown; the ventral and anal fins are tinged with red.

As regards the size and weight of the carp, we extract a few lines from Mr. Yarrell's valuable work. 'Though not so rapid in their growth as some fish,' says this author, 'carp have attained three pounds weight by their sixth year, and six pounds weight before their tenth year. The largest I can refer to are thus noticed in Daniel's Rural Sports:—"Mr. Ladbroke, from his park at Gatton, presented Lord Egremont with a brace that weighed thirty-five pounds, as specimens to ascertain whether the Surrey could not vie with the Sussex carp." In 1793, at the fishing of the large piece of water at Stourhead, where a thousand large brace of killing carp were taken, the largest was thirty inches long, upwards of twenty-two broad, and weighed eighteen pounds.

'At Weston Hall, Staffordshire, the seat of the earl of Bradford, the painting of a carp is preserved, which weighed nineteen and a half pounds. This fish was caught in a lake of twenty-six acres, called the White Sitch, the largest of three pieces of water which ornamented this fine estate.'

Carp are in season for the table from October to April.

The *Crucian Carp*, or *Prussian Carp* (*Cyprinus gibelio*, Bloch), is another species of this genus now naturalized in this country, and which is said to have been introduced from Germany.

This species is considerably less than the common carp its usual weight is about half a pound; it has been known however to weigh upwards of two pounds

The Crucian carp may at once be distinguished from the common carp by the absence of barbules on the lips. The greatest depth of the body is equal to one-third of the whole length, the tail included; the lateral line descends in a gentle curve from the upper angle of the operculum below the middle of the body, from whence it is straight; the tail is forked; the longest rays are about one-third longer than the shortest rays; the dorsal and anal fins have a strong bony ray, as in the common carp, but these rays are not so deeply serrated. The number of fin-rays are—dorsal, 18; pectoral, 14; ventral, 9; anal, 8; and caudal, 19.

The colour of the upper parts is olive-brown; the belly is almost white; the cheeks and gill-covers are of a brilliant golden-yellow hue; the fins are for the most part of an orange-red colour.

This fish is found in some of the ponds in the neighbourhood of London, and in other parts of England, but is rather local.

The last species which we shall notice is the Gold Carp (*Cyprinus auratus*, Linn.). The gold and silver fish, as it is termed, has been long known in this country: it is a native of China, and, according to Pennant, was first introduced into England in 1691, but was not generally known till 1728. The gold carp is now completely naturalized, both here and in other parts of Europe, where it has been introduced, and breeds freely, especially in ponds in warm and sheltered situations. In many of the streams of Portugal it abounds, whence they are brought over to this country in the trading vessels for sale.

This fish is too well known to require description. It is subject to much variation not only in colour but in the fins, which are sometimes double, and not unfrequently have triple tails; in the latter case however it appears that the tail is thus developed at the expense of part or the whole of some other fin. When young, the gold carp is of a very dark colour, approaching to black; this dark colour is replaced by the golden-red hue more or less early according to the constitution of the individual.

CYPRI'NUS. [CYPRINIDÆ.]

CYPRIS. [BRANCHIOPODA, vol. v., p. 341 et seq.; CRUSTACEA, vol. viii., p. 198.]

CYPRUS (Κύπρος), called by the Turks Kibris, a large island in the Mediterranean, lying near the coasts of Syria and Asia Minor. Its length is 140 miles, from Cape St. Andrea at the north-east extremity, in 34° 41′ E. long., to Cape St. Epiphanias, the antient Acamas, at its west end, in 32° 18′. Its greatest breadth, which is in the west part, is about 50 miles from north to south; but it gradually narrows towards the east, being no more than five miles wide at the east end, which is 65 miles distant from Latakieh, the nearest point of the Syrian coast. The nearest point of the coast of Cilicia or Caramania, Cape Zephyrium, is about 42 miles north by west of the point of land in Cyprus which is near the antient Carpasia. A range of mountains runs through the island in the direction of its length, keeping closer to the north than to the south coast: the plains are consequently chiefly on the south side of the range. These mountains, called Olympus by the antients, are now known by several names; the highest summits are the Thrados, 24 miles north of Limasol, which is above 7000 feet; Mount Santa Croce, 18 miles north of Larnika, upon which is a church, said to have been founded by Helena, the mother of Constantine; and Buttavent, five miles from Cerini, near the north coast, with a monastery and an old castle upon it, from which there is a splendid view. (Mariti, *Travels in Cyprus*.) The most extensive plain, called Messarea, is in the south-east part of the island, and is watered by the river Pedæus, which is however nearly dry in summer, like all the other rivers of the island.

Strabo (Casaub. 682, &c.) gives the following enumeration of the towns of Cyprus in his time. On the north coast, east of Cape Acamas, were Arsinoe, Soli, with a harbour, founded by Phalerus and Acamas of Athens; Limenia, inland; then east of Cape Crommyon, Lapathus, built by the Lacedemonians; next Agidus, Aphrodisium, and Carpasia; east of the last was a mountain and cape called Olympus, with a temple of Venus upon it, which women were forbidden to enter. Facing the cape are two small islands, called Cleides, or the keys of Cyprus. (Herod. v. 108.) Turning thence towards the south was Salamis, at the mouth of the Pedæus, one of the principal cities of the island, said to have been built by Teucer, an emigrant from the island of Salamis. Proceeding southwards was another Arsinoe, with a port; next came Leucolla, near Cape Pedalium, a lofty table-land, called the Table of Venus. West of Pedalium was Citium, with a harbour that could be closed. Citium was a large town, and the birthplace of Zeno the Stoic. From Citium to Berytus in Syria the distance was 1500 stadia. West of Citium was Amathus. Inland was Palæa, and another mountain called Olympus. Sailing round Cape Curias to the west, was the town of Curium, with a port, built by the Argivi. Here the coast turns to the north-west, looking towards Rhodes, and had the towns of Treta, Boosoura, and Old Paphos; then Cape Zephyrium; and next to it another Arsinoe, with a port and temple and sacred grove, and New Paphos, built by Agapenor, 60 stadia by land from Old Paphos. [BAFFO.]

Most of the above towns, and others which Strabo has left out, have long since disappeared. The present towns of Cyprus are, 1. Leikosia, vulgarly called Nikosia, the capital of the island, and the residence of the Turkish governor, which is near the site of the antient Letra, or Leucotra. Its population is said to be above 12,000; it lies in the centre of the island, in a plain surrounded by mountains. Leikosia was the residence of the kings of Cyprus of the Lusignan dynasty, and was then much larger than at present: the Venetians destroyed part of it in order to strengthen the remainder. It is now three miles in circumference. The church of St. Sophia, a fine Gothic building, is converted into a mosque: the monuments of the Lusignans in it are sadly mutilated. There are also a fine bazaar, a khan or enclosed court, surrounded by apartments for travellers, and the palace of the governor, on the portal of which is still seen the Venetian lion in stone; and several other churches and mosques. The archbishop of Leikosia is metropolitan of the whole island. 2. Famagosta, on the south-east coast, a few miles south of old Salamis, and not far from the site of the antient Tamassus, once famous for its copper-mines, is a town strongly fortified by the Venetians, but now much depopulated and decayed. 3. Larnika, on the site of old Citium, near the south coast, is the most thriving bustling place in the island, being the residence of the European consuls and factors, and the seat of the chief trade. The port of Larnika is at Salines, about one mile and a half from it. A Greek bishop resides at Larnika, and there are also some Latin churches in the town. The houses are built chiefly of clay, and only one story high above the ground-floor, on account of the earthquakes to which the island is subject. The interior of the houses however is comfortable, the apartments are paved with white marble, and almost every house has a garden, of which the Cypriotes are very fond. The principal exports consist of cotton, wine, the best of which is produced near Limasol, salt, corn, opium, turpentine, silk, and fruit. A great part of the island is uncultivated, and is covered with thyme and other aromatic herbs. There are quarries of asbestos, talc, red jasper, agate, and rock-crystal. 4. Limisso, or Limasol, near the antient Amathus: the country here is very fertile in vine and other fruit-trees; carob trees are especially abundant. 5. Baffo, or New Paphos, already mentioned. 6. On the north coast is Cerini, the antient Cerinia, with a fort and a small harbour, from which there is some traffic with the opposite coast of Caramania. Besides these, there are a few Greek villages and several monasteries scattered about the island. The majority of the population are of the Greek Church; there are however some of the Latin communion, as well as Maronites, who also belong to the Western Church.

Cyprus appears to have been colonized by the Phœnicians at an early period. Ethiopians are also mentioned as forming part of the population, but it is difficult to say exactly who are designated under this name: probably some of the tribes south of Egypt who were taken to Cyprus as slaves after it came into the possession of the Egyptians. Greek colonies afterwards settled on the coast. According to Strabo it was divided among several petty tyrants, some say nine in number, who were at times at war with and sometimes allied to the neighbouring powers of Asia Minor and Greece. Amasis, king of Egypt, is said to have invaded Cyprus and taken Citium. The island became subject to the Persians (Herod. v. 108), and afterwards submitted to Alexander the Great, upon whose death it fell, with Egypt, to the share of Ptolemy, the son of Lagus. It continued under the Ptolemies, sometimes united with Egypt, and sometimes under a separate prince of the same dynasty. The last of these princes, brother to Ptolemy Auletes, king of Egypt, incurred the enmity of P. Clodius Pulcher, who, being taken prisoner by the Cilician pirates, sent to the king of Cyprus for money to pay his ransom. The king sent a sum which was too little. Clodius having recovered his liberty by other means, when he became tribune of the people obtained a decree to be passed for reducing Cyprus to a Roman province. (Strabo, 684, and Dion, xxxviii. 30.) M. Cato was sent to take possession of it. The king, on hearing of this design, put himself to death before Cato's arrival. Cato seized upon the treasury, which was well filled, and sent a large booty to Rome. Cyprus thus became a Roman province. On the division of the empire it fell to the lot of the Byzantine emperors, and after several vicissitudes became a separate principality under a branch of the Comneni. Richard of England took it in 1191, and sold it to the Templars, whose oppression drove the people to revolt. Richard resumed the sovereignty, and gave it to Guy of Lusignan, the expelled king of Jerusalem, in 1192. The Lusignans retained it for nearly three centuries, which was a flourishing period for Cyprus. John III. of Lusignan died in 1458, leaving the kingdom to Charlotte, his only legitimate child, who married her cousin Louis, Count of Geneva, second son of the duke of Savoy and of Anna of Cyprus. She was solemnly crowned at Leikosia in 1460, but was soon after expelled by her natural brother James, assisted by the Mameloukes of Egypt. James married Catharine Cornaro, the daughter of a Venetian merchant, who brought him a dowry of 100,000 golden ducats. On this occasion the Venetian senate adopted Catharine Cornaro as daughter of St. Mark, and the marriage was celebrated in 1471. In 1473 James died, and his wife soon after was delivered of a son, of whom the republic of Venice assumed the guardianship, and Venetian troops were sent to garrison the towns of the island. The child dying while an infant, the senate persuaded Catharine, in 1489, to abdicate the sovereignty in favour of the republic, and to retire to Asolo near Treviso, where she lived the rest of her days in a princely style on a liberal pension. Meantime Charlotte Lusignan had retired to Rome, where she died in 1487, bequeathing her claims to Charles Duke of Savoy, in consequence of which the sovereigns of that dynasty assume to this day the title of Kings of Cyprus and Jerusalem. The Venetians kept possession of Cyprus till 1470, when Selim II. sent a powerful force to invade the island. The Turks took Leikosia by storm, and massacred about 20,000 people. They then laid siege to Famagosta, which was long and gallantly defended by the proveditor-general, Marcantonio Bragadino. At last, in August, 1571, the Venetians were obliged to capitulate, on condition of being sent safely home. The pacha Mustapha signed the capitulation, but when Bragadino with the other Venetian officers repaired to his tent to deliver the keys, he had them all seized and put to death, except Bragadino, whom, after some days, he caused to be led naked to the square of Famagosta, where, in the pacha's presence, the executioner began to flay him alive. Bragadino expired in the midst of the torments, which he endured to the last with the greatest constancy. His skin was filled with straw and hung up to the yard-arm of the admiral's vessel, in which Mustapha returned to Constantinople. Venice raised a monument to the memory of Bragadino in the church of San Giovanni e Paolo, and his relatives after a time ransomed his skin, which was placed in the monument. From that time the Turks have remained in possession of Cyprus. A revolt broke out among the inhabitants in 1764, but was put down.

(Mariti, *Travels;* Paruta, *Historie Venetiane;* Botta, *Storia d'Italia.*)

CY'PSELUS. [Corinth.]

CY'PSELUS. [Hirundinidæ.]

CYR, ST., a village near Versailles, in France, celebrated for its royal abbey, an institution founded by Louis XIV., at the desire of Madame de Maintenon, for the education of young ladies of noble birth. Previous to the foundation of this establishment, St. Cyr was composed only of some peasants' cottages, with the château of the lord of the village. The institution was for two hundred and fifty young ladies who could show a noble descent of four generations on the father's side: they were received between the ages of seven and twelve years, and maintained, instructed, and furnished with everything till they reached the age of twenty. The girls were instructed by about forty ladies, and waited upon by about the same number of attendants, denominated 'sœurs converses.' The ladies to whom the instruction of the pupils was confided were subject to a monastic rule, but our authority differs as to whether it was that of St. Benedict (Vaysse de Villiers) or St. Augustin (Prudhomme); the dress of the pupils was plain, without being monastic, and they did not use the monastic style of address, 'mother' and 'sister,' but 'madame,' with the name of the individual spoken to, as usual in society. On quitting the establishment they received a dowry of a thousand crowns. The buildings of the abbey were designed by Jules Hardouin Mansard, the favoured architect of Louis XIV., and consisted of twelve principal piles of building, forming five courts, with extensive gardens attached. The buildings were commenced in 1685 and completed in a year; 2500 workmen were engaged in the work. Louis XIV. was in the habit of visiting Madame de Maintenon in a pavilion in the garden; and in the buildings of the institution the young ladies used to perform the 'Esther' of Racine, whose 'Athalie' was also written for them, though only performed by them twice, and that without dresses, and not in their theatre. Madame de Maintenon passed the close of her life at St. Cyr, and dying there A.D. 1719, was buried in the choir of the church, where a long epitaph, in French and Latin, was inscribed to her praise.

This establishment was suppressed at the Revolution, and the buildings were at first devoted to the purpose of a military hospital, subsidiary to the Hôtel Royal of Paris. In 1814 Napoleon transferred hither the military school of Fontainebleau, and the restored government of the Bourbons sanctioned the change. The gardens have been converted partly into parades for the pupils and partly into a kitchen-garden. The establishment includes a governor of the rank of general, a lieutenant-governor of the rank of colonel, twenty-four professors, and a variety of other officers. The pupils amount to 350, part of whom are maintained by the government and part are at their own charge. They enter between the ages of sixteen and twenty, and about 140 leave the institution every year; some stay two years, and others three. (Dulaure, *Histoire des Environs de Paris;* Prudhomme, *Dictionnaire Universel de la France.* Vaysse de Villiers.)

CYRE'NA. [Veneridæ.]

CYRENA'ICA, a region of North Africa, comprehending the country between the Great Syrtis and the Gulf of Platea, now Bomba. The western limits between Cyrenaica and the Carthaginian dominions were fixed at the Philænorum Aræ at the bottom of the Great Syrtis, and its east limits towards Egypt seem to have been about the Catabathmus Magnus. Cyrene, Teuchira, and Hesperis were the earliest Greek colonies. Barca was a colony of Cyrene, mixed with Libyan aborigines. Afterwards, under the Ptolemies, Teuchira took the name of Arsinoe, Hesperis was called Berenice, and the port of Barca became the city of Ptolemais, and drew to it most of the inhabitants of Barca itself. The port of Cyrene, called Apollonia, became also an important town. From these five cities, Cyrene, Apollonia, Ptolemais now Ptolometa, Arsinoe, and Berenice, the country was sometimes called Pentapolis. The interior was peopled by Libyan tribes. There were also other towns mentioned as having existed in this country in the Roman period, such as Darnis, Hadriana, Neapolis, Thintis, &c.; but their site is not well ascertained, except Darnis, which is believed to have been where Derna is now. This interesting region remained for many centuries unexplored by European travellers, until an Italian, Dr. Della Cella, in the service of the pacha of Tripoli, visited it in 1817. 'Viaggio da Tripoli di Barberia alle Frontiere Occidentali dell' Egitto,' Genoa, 1819. The narrative is in a series of letters to a friend, and is written in a simple unpretending style. Dr. Della Cella's observations were made in haste, and without much opportunity for taking an accurate survey of the country. In 1821-2, Captain Beechey, R.N., and H. W. Beechey, explored the coast of the Pentapolis, as well as the ruins of Cyrene: 'Expedition to explore the North Coast of Africa from Tripoli eastward, comprehending an Account of the greater Syrtis and Cyrenaica, and of the antient Cities composing the Pentapolis,' 4to., London, 1828, with maps and plates, a most interesting work. Lastly, this country was visited by M. Pacho, a young and enterprising French traveller, whose melancholy death happened just before the publication of his work: 'Rélation d'un Voyage dans la Marmarique, la Cyrènaique et les Oases d'Audjelah and de Maradeh, accompagnées de Cartes Géographiques et Topographiques et de Planches representant les Monumens,' 4to., with Atlas, fol., Paris, 1827-9. In describing this country, we shall follow the route of MM. Beecheys, who went from Tripoli round by the shores of the Great Syrtis to Bengazi. Pacho, coming from Egypt, entered Cyrenaica on the opposite side by Derna, and his information is most valuable and novel on that part of the country known in antient times by the name of Marmarica, and which extends from Alexandria to Derna. He also visited the great Oases of Augila and Maradeh, which lie in the Libyan desert, south of Cyrenaica.

As the traveller approaches Bengazi from the south he sees the country improve, and leaving behind the sandy tracts of the Syrtis, which continue to spread inland in an eastern direction, he enters a new region of hills and plains fit for cultivation, and covered with vegetation. The coast stretches to the north-east, forming a curvilinear peninsula which advances into the Mediterranean, between the Great Syrtis to the west and the Gulf of Bomba to the east. The chord of this curve from Bengazi to Bomba is about 150 miles, but the sweep of the coast is above 200. A ridge of mountains from 800 to 1100 feet high begins to the south-east of Bengazi, and extends to the north-east in a diagonal direction to the shore, being distant from Bengazi about fourteen miles, from Teuchira five, from Ptolometa about two, and then comes close to the sea at Ras Sem, continuing along the coast to Apollonia, and as far as Derna. Farther inland is another range, nearly 2000 feet above the sea, which forms the plateau on which Cyrene stood, and which declines gradually towards the east, and blends with the lower one near Cape Bujebara. It then joins the mountains of Akabah el Soloum, the Catabathmus Magnus of the antients, which run through Marmarica in a south-east direction to the Oasis of Siwah. To the south and south-west the mountains of Cyrene slope gradually to the level of the Libyan desert and of the sandy tract which borders the Great Syrtis. According to Pacho, the greatest breadth of the hilly region from north to south is between seventy and eighty miles. Towards the north both the higher and lower ridges are frequently broken by deep wadys or chasms, through which the winter torrents rush to the sea. In these chasms or valleys grow a vast number of pine trees, generally small, though some are large enough for top-masts of a man-of-war. The largest of these chasms is near Cape Ras Sem, with a perennial stream running through it, which is supplied from the fountain of Cyrene. Clusters of date trees are seen near Bengazi and Derna. The road from Bengazi to Tocra or Teuchira and Ptolemeta, lies through a very fertile and beautiful country, though a comparatively small part of it is cultivated. It is a plain, thickly covered with wood and flowering shrubs, stretching from the sea to the foot of the mountains, and narrowing every mile as we proceed towards Ptolemeta, where the high land comes very close to the sea. The whole length of the plain from Bengazi to Ptolemeta is fifty-seven geographical miles. The sides of the mountains also are thickly clothed with wood, chiefly pine of various kinds, and numerous shrubs, among which the juniper abounds. Ravines whose sides are covered with wood and verdure cross the road very frequently in their course from the mountains to the sea, most of which must be impassable in the rainy seasons, as there is nothing like a bridge over any of them. Open spaces, some of considerable extent, also occur occasionally in the woods; they were probably once cultivated, but are now thickly covered with grasses of various kinds, among which oats grow spontaneously, as well as a species of wild artichoke, which is eaten raw by the Arabs. Several towers of very solid construction are scattered along this road.

Of the five towns of the Pentapolis, Bengazi is generally believed to occupy the site of the antient Hesperis, afterwards called Berenice, of which there are hardly any remains above ground. [BENGAZI.] In the neighbourhood of Bengazi there are some curious chasms or pits sunk in the rock sixty or seventy feet below the plain, with excellent soil at the bottom, covered with trees and rich vegetation, and which seem to answer to the description of Scylax of the gardens of the Hesperides. The next town on the coast is Tocra, the antient Teuchira, afterwards called Arsinoe, which, although totally deserted, is still completely inclosed, except on the sea or north side, by walls of uncommon solidity and thickness, strengthened at intervals by quadrangular towers, twenty-six in number, and is entered by two strong-built gateways placed opposite to each other on the east and west sides of the walls. The circuit of Teuchira is about one mile and a half. It is situated in a plain about four miles from the foot of the mountains. The interior of Teuchira has been utterly destroyed, and the few remains, among which are those of a handsome Christian church, are not distinct enough to give an idea of the former buildings. The line of some of the streets however is distinctly traced. We know very little about the history of Teuchira, or of the epoch of its final destruction. The walls were repaired by Justinian, in doing which blocks of stone and marble have been introduced, many of them bearing Greek inscriptions, which evidently formed part of much older buildings. A number of quarries with excavated tombs are seen outside of the city walls. There is no appearance of a port at Teuchira, and the position of the coast is such as not to afford shelter to vessels. Ptolemeta or Dolmeta is also ruined: several of the buildings however are partly standing, such as a lofty gateway, an amphitheatre, two theatres, a palace or large building, the inner court of which retains its tesselated pavement; several columns are still erect, and a number of others are thrown down in heaps. Though the walls of Ptolemeta have been thrown down, their line can be traced in many places, but nowhere do they rise more than one foot above the ground. Ptolemais was originally the port of Barca, which latter is mentioned as one of the five cities of the Pentapolis, though it was inhabited by a mixed Greek and Libyan race. Ptolemais and Barca have been confounded by some geographers, but Ptolemy distinguishes them, and Scylax says that Barca was 100 stadia from the sea. Under the Ptolemies of Egypt, the port of Barca assumed the name of Ptolemais; and in the vicissitudes of the country, the Greek population of Barca withdrew to Ptolemais, which flourished through its maritime trade. Pomponius Mela mentions Ptolemais, and not Barca, among the cities of Pentapolis. Barce or Barca was however still inhabited under the Arabs, who gave its name to the whole country of the Pentapolis; but the town sank at last into total desolation and oblivion, and even its site is not now ascertained, though probabilities are for its being in the plain of Merdje on the first ridge of hills south of Ptolemeta, and on the road to Cyrene. (BARCA; and also Beechey's *Narrative* and Quotations.) Ptolemeta lies in a delightful position at the foot of the hills, and on a slope stretching to the sea between two romantic wadys or ravines. Its extent, as far as it can be traced, was about one square mile: but the whole space is now overgrown with wild vegetation, with patches of corn here and there among the ruins The Arabs sow the corn and leave it to the winter rains, and they return at harvest time to cut and carry it off. There are several large cisterns in good preservation, which were restored by Justinian, and now afford a supply of good water.

The road from Ptolemeta to Cyrene leads up a romantic valley, the sides of which are thickly clothed with pines, olive trees, and various kinds of laurel, interspersed with clusters of luxuriant honeysuckles, myrtle, arbutus, juniper, and a variety of wild roses, and then opens into the plain of Merdje, a large and fertile tract about five miles in breadth, on the summit of the first range of mountains, with pools and small lakes formed by the waters from the upper ridge. The Arabs encamp here, and partly sow the ground with corn, and use the rest as pastures. From the plain of Merdje the path follows the track of the antient road in a north-east direction leading through a succession of hills and fine vallies to Ghrenna, the Arab name for Cyrene. On approaching Ghrenna the country becomes more clear of wood, the valleys produce fine crops of barley, and the hills afford excellent pasture for cattle. A plant, three feet high, perhaps the silphium of the antients, and resembling in shape the hemlock, grows here in great abundance. The position of Cyrene is one of the finest that can be imagined, being on the edge of the upper range of hills about 800 feet above the lower range. Below the town the hill slopes down towards the north, forming several natural terraces one below the other, and terminating with a fine sweep of table-land, which forms the summit of the lower range, and which is covered with wood, with scattered tracts of corn and verdant pastures. Ravines whose sides are overgrown with trees, intersect the country in various directions, and form the channels of mountain streams. This table-land extends east and west as far as the eye can reach, and to the north after stretching about five miles, it descends abruptly to the sea. The slope of the lower ridge, which runs along the coast of Cyrenaica, is here thickly covered with wood. Its height is about 1000 feet, so that Cyrene is about 1800 feet above the sea, of which it commands an extensive view. The ledges or terraces of the upper ridge afforded room for roads or drives sweeping along the sides of the mountain, and the tracks of the chariot wheels are still impressed upon the rock. The remains of Cyrene occupy a vast extent of ground, but they have been sadly disfigured by the hand of man. Innumerable tombs, either built of stone or excavated in the rock, encircle the town, and are ranged on each side of the avenues leading to it. In some of these excavations paintings have been found in good preservation, representing funeral games, hunting parties, several sketches of private life, and allegorical subjects. The costumes are beautifully rendered, and the colours very brilliant. Within the precincts of the antient town are the remains of a bath built of brick, of which some parts of the vaulted work are still left, some towers or forts, a very large hypogeum picturesquely situated on the extremity of the only grove that is found on the plateau, several large temples of the Doric order, two small excavated temples of the Roman period with Christian emblems, two theatres, an amphitheatre, an aqueduct, but all sadly damaged; in fact, the whole of the existing remains are at present little more than one mass of ruins, and the tombs afford the most perfect examples of Grecian art now remaining in Cyrene. A quantity of prostrate columns, statues, capitals, rilievi, and inscriptions, are scattered about the ground, but the statues are mutilated, and many of them want their heads, which the Arabs have cut off. There are two copious springs, from one of which, supposed to be the fountain of Apollo, the water flows into a subterraneous channel, and then issues out on the other side of the mountain.

The country around Cyrene must have been in the time of its splendour a complete garden, and it is easy to conceive how the people of such a country became so much addicted to luxury and pleasure as they are reported to have been. Even now in its wild state 'the rich ochrish red soil, watered by rivulets gushing on every side, brings forth a rich vegetation which pierces the mossy rocks, clothes the hills, extends in rich pastures, or develops itself in forests of dark juniper, green thaya, and pale olive trees. The modern name of the Cyrenaica, "Jebel Akhdar," *i. e.*, "the green mountain," expressively indicates its rich and smiling aspect.' (Pacho, *Voyages dans la Marmarique et la Cyrènaique.*)

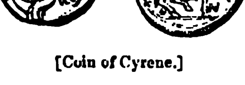
Cyrene appears to have gradually declined under the Romans as the maritime towns of the Pentapolis rose in importance. It afterwards suffered greatly, and was in a great measure ruined during the dreadful insurrections of the Jews under the reigns of Trajan and Hadrian; the province was depopulated when Hadrian colonized it afresh, at which time it is probable that many of the buildings of Cyrene were restored, for there is a variety of Greek and Roman style observable in them as well as in the sculptures. The Jews were at one time very numerous in Cyrenaica; they had settled in it in the time of the Ptolemies, and chiefly resided at Berenice, where they formed a distinct community governed by two archons.

In the fourth century, Synesius, bishop of Ptolemais, one of the most eloquent of the early fathers, deplored the ruin and depopulation of Cyrene, hastened by the oppressions of the Byzantine governors. It was in his time that Cyrene was destroyed by an invasion of some barbarous hordes of the interior of Libya, whose women were armed as well as the men, who destroyed all before them, and only spared the male children to recruit their ranks. (Synesii *Opera*, p. 300.) Those of the inhabitants of Cyrene who escaped took refuge at Ptolemais. The barbarians besieged Ptolemais, in which Synesius had remained faithful to his flock, and they were repulsed. In the early part of the seventh century the Persians under Khosroo Purveez, after overrunning Egypt, invaded the Pentapolis and depopulated the country. The Saracens afterwards completed the work of the Persians, and the towns of the Pentapolis have remained in ruins ever since. Now the nomade Arabs wander about the whole region, which is nominally subject to the Beys of Bengazi and of Derna, who are dependants of the pacha of Tripoli. Apollonia, afterwards Sozysa, and now called Mersa Soosa, was the port of Cyrene, from which it is about twelve miles distant. The antient road leading to it still remains. Apollonia lies at the bottom of an open bay, protected however by two small islands in front of the town. The town is ruined, but the greater part of the wall is standing, and there are remains of two Christian churches, the columns of which are of fine marble, of a basilica, a fort, &c. MM. Beecheys have given plans of Ptolemeta, Teuchira, Apollonia, and Cyrene, as well as of the modern towns of Bengazi and Derna. Pacho's Atlas gives many views and plans of the different monuments of Cyrene, Ptolemeta, &c.

CYRENA'ICS, a school of philosophers among the Greeks, who derived their name from the birth-place of their founder Aristippus. Like the Cynics, their doctrines were a partial development of those of Socrates; but the view which they took of their predecessor's philosophy was quite different from the Cynical. [CYNICS.] The only particular in which the two sects agreed with the original system and with one another was that they all three made virtue consist in knowledge; in other words they were all three attempts to awaken and develop the idea of science; but while the Cynics considered all sublunary enjoyment and most branches of knowledge as impediments to the knowledge, and consequently, according to Socrates, to the practice, of virtue, the Cyrenaics, on the other hand, were not contented with the mere knowledge of the good as a general term, but sought for it in the separate particulars, and deemed him to have performed his proper functions most consistently with his nature who had succeeded in amassing the greatest number of particular good things. In regard to the idea of science, they did not look upon it as a speculative conception, but as a merely empirical result, as the aggregation of successive experiences; in other words, not as an intuition but as a combination of perceptions; and while Plato, and in some measure the Cynics also, placed the *summum bonum* in the attainment, by means of dialectics, of the abstract idea of the good, the Cyrenaics placed it in the collection of the greatest number of agreeable perceptions, and the true philosopher, according to them, was one who actively, methodically, and successfully carried on the pursuit of pleasure. Consequently, as agreeable perceptions; were continually to be sought as good and the contrary to be avoided as bad in themselves, perception of sensible objects became the criterion of all knowledge and the object of all action, and therefore truth both theoretical and practical. (Sextus Empir. *adv. Mathematicos*, vii., § 191—200.) The chief successors of Aristippus were Theodorus, Hegesias, and Anniceris. Theodorus perceived the necessity for some principle, in addition to the mere collection of agreeable sensations; for without some effort of the understanding to determine which of many gratifications was to be preferred, it would be impossible, he thought, to obtain the maximum of gratification; and he therefore set the understanding over the senses as a regulating and restraining faculty. He is said to have been banished from Athens for denying the existence of the gods. (Diog. Laërt., ii., § 97.) Hegesias, following in the steps of Theodorus, insisted still more than he did upon the inadequacy of the senses as the criteria of the desirable, and at last even went so far as to assert that nothing was in itself either agreeable or the contrary, and that life and everything in life should be a matter of indifference to the wise man. In this assertion of the principle of indifference he made an approach to the doctrines of Epicurus and the Stoics in the point in which those two opposite systems met. Cicero tells us (*Tuscul. Disput.*, i., c. 34) that his book called *ἀποκαρτερῶν* caused so many suicides that he was forbidden by one of the Ptolemies to lecture on the worthlessness of life. In the philosophy of Anniceris and his followers the original principles of the Cyrenaics were quite lost, and though he also, in a popular way, recommended the pursuit of the agreeable, he denied that it depended in any way upon mere sensible impressions, for that the wise man might be happy in spite of all annoyances; that friendship was to be sought, not for the sake of any immediate advantage to be derived from it, but on account of the good-will which it generated; and that for a friend's sake a man should encounter even annoyances and troubles. (Diog. Laërt. ii., § 96, 97.) These are the doctrines of a mere popular morality, and can hardly be ascribed to one school more than to any other. It will be remarked by every one that the original tenets of this school were very similar to those of Epicurus; indeed, with the exception of the atomic system which he borrowed from Democritus and Leucippus, the two systems differed only in this· the Cyrenaics placed the great object of man in the positive and active pursuit of the agreeable, while Epicurus made it consist in a perfect rest of mind and in freedom from pain; for he considered the agreeable as something merely negative, as the pleasing harmony produced by exemption from all passion and appetite. The philosophy of Epicurus may therefore be considered as the successor, in one point of view, of the system of Aristippus.

CYRE'NE (Κυρήνη), a city of Libya, near the coast, to the east of the Great Syrtis, was founded B. C. 631, by a colony from Thera (Herod. iv. 155), an island in the Ægean sea. Thera was a Lacedæmonian colony (Herod. iv. 148), and when Isocrates (Philip. § 254) speaks of the people of Cyrene as a colony from Lacedæmon, it is either on account of the origin of Thera itself, or because, as is reported by Pausanias (iii. 14), Anchionis and a considerable number of Lacedæmonians accompanied Battus, the leader of the colony, to the coast of Libya. Battus, according to Herodotus (iv. 155), was the son of Polymnestus, one of the principal citizens of Thera, and received this surname on account of an impediment in his speech; Callimachus, who appears to have been one of his descendants (Strabo, pp. 837, 838, *b. a.*) gives (*Hymn to Apollo*, v. 73) Aristoteles as the original name of Battus, and this is confirmed by the Scholiast on Pindar (*Pyth.* iv. 104). The immediate occasion on which the colony was planted is variously stated by different writers: it was probably the result of some political commotion in which the vanquished party was forced to quit the island. At any rate it appears that the Delphic oracle was consulted, and that its suggestion was taken. Battus and his comrades sailed for the coast of Libya, but they had not proceeded far before they were alarmed at the dangers of the navigation, and resolved to put back to Thera. On approaching the island they were pelted by the inhabitants on the shore, and being unable to land, they had no alternative but to set sail again. They at last reached the coast of Libya and settled in an island called Platea, where they remained two years; afterwards they removed to Aziris, where they remained six years, and at length settled in the place which they called Cyrene, a name said to be derived from a fountain Cyre flowing near. The following is a list of the kings of Cyrene, with the length of their reigns, as far as can be ascertained:—

Battus I. (reigned 40 years), died about B. C. 591; Arcesilaus I. (16 years), B. C. 575; Battus II., surnamed the Happy (21 years), B. C. 554; in this reign the colony was greatly increased by emigrants from Greece; Arcesilaus II. (4 years), put to death B. C. 550; Battus III., surnamed the Lame (about 21 years), B. C. 529; in this reign, Demonax, of Mantinea, introduced laws which greatly modified the constitution and diminished the royal power; Arcesilaus III. (about 13 years), B. C. 516; this king submitted to the Persians (Herod. iii. 13), but afterwards recovered the kingship and exercised his power so tyrannically that he was assassinated in Barca. Of Battus IV. and Arcesilaus IV. we have no certain information. About B.C. 450 the government appears to have changed to a republic, but the particulars of the constitution are unknown. (Aristoteles, *Politic.* vi. 4). The subsequent history of Cyrene seems to have been a series of changes and internal troubles till after the time of Alexander, when it became subject to Egypt in the reign of the first Ptolemy, and so it continued till Ptolemy Physcon, whose bastard son Apion, being in possession of the chief power, gave it into the hands of the Romans about B.C. 97. Strabo says (837 *c.*) that in his time the kingdom of Cyrene, with Crete, formed a Roman province.



[Coin of Cyrene.]

British Museum. Actual Size. Gold. Weight, 6º grains.

Cyrene produced many celebrated persons: Aristippus, his daughter Areta, and her son Aristippus, Anniceris, Eratosthenes, and Carneades, besides Callimachus, the poet. Aristippus the Elder was the founder of that sect of Socratic philosophers which was called Cyrenaic, from his birthplace. (Strabo, pp. 837 *d.* 838 *a.*)

Cyrene was famous for a fine breed of horses. The Cyrenæan doctors had a high reputation; they were considered in Greece at one time to be inferior only to the doctors of Croton (Herod. iii. 131). (Herodotus, iv. 154-167; Strabo, pp. 56 *d.*, 836, 837, 838).

CYRIL, ST., of Jerusalem, was born in that city about A. D. 315; and received among the clergy there an education for the church. In 345 he was ordained priest and catechist by Maximus, the Patriarch, or, which in fact is the same thing, archbishop of Jerusalem. On the death of that prelate, A. D. 350, Cyril was chosen to succeed him, and the commencement of his episcopate is said to have been signalized by a wonderful luminous appearance in the heavens, called the Apparition of the Cross. It is spoken of in the Chronicle of Alexandria, by Socrates (lib. ii. c. 28), by Philostorgius (lib. iii. c. 26), and by several other ecclesiastical historians. The letter immediately written by St. Cyril to the emperor Constantius describing this miraculous phenomenon, is quoted in proof of the fact by Sozomen, Glycas, Theophanes, John of Nicæa, Eutychius, and many subsequent writers. Dr. Cave, in his Life of St. Cyril, inserts it entire. It is stated that on the nones (7th) of May, A. D. 351, at nine in the morning, a great mass of light, far brighter than the sun, was observed over Golgotha, and extending to Mount Olivet (two English miles); that it assumed the form of a cross, and was seen during several hours by all the inhabitants of Jerusalem. The expression of a wish, with which the letter of Cyril concludes, that Constantius might glorify the consubstantial Trinity (τὴν ὁμοούσιον τριάδα) tends to invalidate the evidence of the fact as an especial miracle, since it shows that Cyril, a zealous Trinitarian controversialist, sought to influence the creed of the emperor, which strongly favoured the Arian tenets: and it is well known to have been a general maxim among the primitive fathers that a pious and orthodox end fully justifies a recourse to any means, however inconsistent with veracity. The zeal with which St. Cyril enforced and defended the doctrine of the consubstantiality of the Son, with the jealousy about precedence, and the ambitious encroachment of jurisdiction, which characterize the episcopal history of that age, occasioned Acacius, the Arian bishop of Cæsarea, to commence a course of persecution against him which terminated in his deposition by a council, A. D. 357. On this he retired to Tarsus until 359, when, by a council of Seleucia, he was re-established in his see, but, through the party of Acacius, he was immediately deposed a second time by a council of Constantinople A. D. 360. On the accession of Julian, who, to increase the broils of the church, recalled all the exiled bishops, Cyril returned to his bishopric, from which, under the emperor Valens, he was expelled a third time by Eudoxus, the Arian bishop of Constantinople, A. D. 367. Finally, under Theodosius, who favoured the Trinitarian sect, he was again restored by a council of Constantinople in 381; and notwithstanding the ambitious and schismatic contests of the bishops and clergy, he remained in his see until his death, A. D. 386. An incident noticed by all the biographers of St. Cyril, is the celebrated attempt of the emperor Julian to rebuild the temple of the Jews at Jerusalem, ostensibly for the purpose of promoting their religion, but really with the sinister view of falsifying the prophecies respecting its irreparable destruction. It is said that notwithstanding the enthusiastic expectations of the Jews, and the prodigious preparations and actual commencement of the work, St. Cyril's reliance on the infallibility of the scriptures induced him to persevere in predicting the failure of the project; and that, accordingly, a series of earthquakes, storms of lightning, and subterraneous eruptions of fire and smoke, destroyed all the materials and a multitude of workmen, the garments of those who escaped being impressed with shining phosphoric crosses, which, even by washing, could not be effaced. The particulars of this miraculous fulfilment of Cyril's prediction are related by St. Gregory Nazian. (*Orat.* 4 *advers. Julian*); by Theodoret, Socrates, St. Chrysostom, Philostorgius, Sozomen, and St. Ambrose. See also bishop Warburton's *Dissert.* on the subject, p. 88.

The extant writings of St. Cyril are in the Greek language, and consist of eighteen books of catecheses, or sermons, delivered during Lent to the catechumens, called before baptism Illuminati (φωτιζόμενοι): five similar discourses delivered during Easter week to the neophytes, after baptism called mystagogic (*μυσταγωγικά*), being explanatory of the mysteries of the Christian sacraments: a treatise on words, and the letter to Constantius: besides which, several homilies and epistles are sometimes improperly included. Rivetus, in his 'Criticus Sacer' (lib. iii. c. 8, 9, 10, de Cyrilli Catechesibus), considers the five Mystagogics, and letter to Constantius, as supposititious, but by Vossius, Cave, Mill, Whittaker, and bishop Bull, they are acknowledged as genuine. The books of Catecheses are crowded with quotations from scripture, and the style is dull and tiresomely prolix; but the facts they contain relating to the doctrines and discipline of the Eastern church in the fourth century are extremely interesting to the student of Christian antiquities. In the first Catechesis are described the effects of baptism. The fourth gives an exposition of all the Christian doctrines, and treats of numerous questions concerning the body, soul, virginity, marriage, &c. The subsequent discourses exhibit and enjoin a belief in the miraculous virtues of the relics of saints, which are represented as worthy of all veneration; in the efficacy of prayers and sacrifices for the dead; in the powers of exorcism, consecrated unction, oil, and water. Christians are exhorted to cross themselves on every occasion and action throughout the day. The enthusiastic adoration of the cross displayed by St. Cyril was probably owing to his officiating in the church of the Holy Cross, in Jerusalem, where, after 'the Invention of the Cross,' it was deposited in a silver case, and shown by the archbishop to thousands of pilgrims, who each took a little chip of it, without occasioning any diminution of its bulk; hence one of his proofs of the truth of the gospel history of the Crucifixion is the fact of the world being full of chips of the cross. A description of this cross is given by Dom Touttée, at the end of his edition of Cyril's works.

The doctrine of the uninterrupted and perpetual virginity of Mary is taught by Cyril. The state of virginity in general is extolled as equal to that of angels; with an assurance that, in the day of judgment, the noblest crowns will be carried off by the virgins. The resurrection is proved and illustrated by the story of the Phœnix, and it is remarkable that this fiction is regarded as a reality not only by St. Cyril, St. Clement, and other Christian bishops, but by many of the most learned and philosophic Gentiles. That Cyril's superstitious credulity and love of the marvellous was remarkably great, is very apparent: for instance, in describing the Descent into Hell, he declares that the doorkeepers of that place, on seeing Jesus, all ran away in a fright: and in his sixth Catechesis on Heresies, he says that Simon Magus, having, by the power of his magic, mounted up into the air in a fiery chariot drawn by a pair of dragons, St. Peter and St. Paul, by their prayers, dissolved the enchantment, and Simon consequently fell to the ground and broke his bones. In the five Mystagogics are described the ceremonies which precede baptism; the anointing with oil the forehead, face, ears, and nose; the forms of exorcism, the holy chrism, confirmation, the eucharist, liturgy, and communion. The dogma of transubstantiation is most explicitly enforced: we are said to be made concorporeal and consanguineal with Christ, by his body and blood being distributed through our bodies. Very minute directions are given for the mode of receiving the eucharistic bread and wine: thus, put your left hand under your right elbow, making with your hollowed right hand a throne for the reception of the body of Christ, and closing your fingers lest a crumb be lost, which would be a greater misfortune than the loss of a limb, &c., then, having drunk of the cup of the blood, moisten the tip of your finger from your lips, and by touching, consecrate your eyes, ears, nose, &c.

For a list of editions of Cyril see Watt's *Biblioth. Brit.*; Mille's ed. of the *Opera Omnia*, Græce et Latine, fol., 1703, contains notes, three indices, and the various readings; but the editio optima is that by Augustus Touttée, a Maurist monk; Gr. et Lat. fol., 1720; (*Lives of Saints*, by the Rev. Alban Butler, vol. iii.; Dr. Adam Clarke's *Succession Sac. Lit.*, vol. i.; Lardner, vol. iv.; Grodecius, *Vita St. Cyrilli*; *Lives of Saints*, vol. i. 4to. 1729.)

CYRIL, ST. (CYRILLUS), of Alexandria, was educated under his uncle Theophilus, the contentious bishop of Alexandria, by whom St. Chrysostom was persecuted and deposed. On the death of Theophilus, A.D. 412, Cyril was so successful in the struggle which, on such occasions, always occurred at that time among the aspiring clergy, that in three days after his uncle's decease he was elected patriarch, that is archbishop of Alexandria. His episcopal power was first displayed in shutting up and plundering the churches of the puritan sect founded by Novatian, who is said to have been consecrated a bishop by three episcopal friends whom he invited and made drunk for the purpose. (Pluquet, *Dict. des Heres.*) Cyril next exhibited his zeal against heretics by heading a furious mob of fanatics, who drove out all the numerous Jewish population from Alexandria, where, since the time of Alexander, its founder, they had enjoyed many privileges, and were politically important as contributors to the public revenue. This arrogant proceeding therefore highly excited the anger of Orestes, the governor of the city, and made him henceforth the implacable opponent of the bishop, who, in the name of the Holy Trinity and Gospels, in vain implored a reconciliation. In consequence of the enmity thus created, and of Cyril's resentment of the checks opposed to his ambitious encroachments on the jurisdiction of the civil power, a murderous attack was made on the governor in his chariot by a band of 500 monks; and one who severely wounded him having suffered death on the rack, Cyril, in his church, pronounced a pompous eulogy over his body as that of a glorious martyr. (Soc., l. vii., c. 14.) By the philosopher Eunapius (*Vita Ædesii*) these monks are described as swine in human form. The tragic story of Hypatia, the daughter of the mathematician Theon of Alexandria, furnishes further evidence of the revengeful disposition of St. Cyril. This lady, whose wonderful abilities enabled her to preside over the Alexandrine school of Platonic philosophy, was the especial object of the bishop's envy and malice; not only because she far excelled him in the depth and extent of her knowledge, which drew to her lectures the greatest philosophers and statesmen, and a crowd of students from Greece and Asia; but because, from her intimacy with the governor and the great respect and admiration he manifested towards her, Cyril and his clergy suspected her influence in promoting the governor's unfavourable opinion of them. The consequent murder of Hypatia is circumstantially related by several ecclesiastical historians. (Socrates, l. vii., c. 13 and 15; Nicephorus, l. xiv., c. 16; Damascius, in *Vita Isidori*; Hesychius and Suidas, in *Ὑπατία*; Photius, *Annot. ad Socrat.*, l. vii., c. 15.) In these accounts it is stated that Cyril having vowed the destruction of this accomplished woman, a party of infuriated wretches, whom Nicephorus (*ubi supra*) expressly declares to have been Cyril's clergy, led on by Peter, a preacher, seized her in the street, and having dragged her into a church, completely stripped her, tore her to pieces, carried the mangled fragments of her body through the streets, and finally burnt them to ashes, A.D. 415. (See Toland's *Hypatia, or the History of a most beautiful, virtuous, learned, and accomplished Lady, who was torn to pieces by the Clergy of Alexandria, to gratify the cruelty of their Archbishop, undeservedly styled St. Cyril*, 8vo., 1730.)

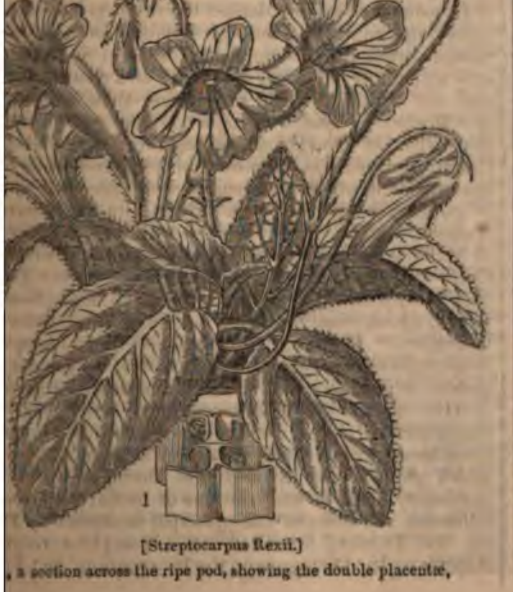
The titles of 'Doctor of the Incarnation' and 'Champion of the Virgin' have been given to this bishop on account of his long and tumultuous dispute with Nestorius, bishop of Constantinople, who denied the mystery of the hypostatic union, and contended that the Divinity cannot be born of a woman—that the divine nature was not incarnate in, but only attendant on, Jesus as a man, and therefore that Mary was not entitled to the appellation then commonly used of 'Mother of God.' (Pluquet.) The condemnation and deposition of Nestorius having been decreed by Pope Celestine, Cyril was appointed his vicegerent to execute the sentence, for which he assembled and presided at a council of 60 bishops at Ephesus. But John, the patriarch of Antioch, having, a few days afterwards, held a council of 41 bishops, who supported Nestorius and excommunicated Cyril, the two parties appealed to the Emperor Theodosius, who forthwith committed both Cyril and Nestorius to prison, where they remained for some time under rigorous treatment. Cyril, by the influence of Celestine, was at length liberated and restored, A.D. 431, to the see of Alexandria, which he retained until his death, A.D. 444.

His works are numerous, and chiefly on subjects connected with the Arian controversy, the incarnation, consubstantiality of the Son, and similar difficult points, which are involved in additional obscurity by an intricate perplexity of style and the use of barbarous Greek. The following are some of the principal treatises:—'Thesaurus on the Trinity,' intended as a complete refutation of Arianism. In 'Dialogues on the Incarnation,' in 'Five books

Nestorius,' and in an ample 'Commentary on St. Gospel,' the same subject is continued. Ten books Julian contain replies to that emperor's three books the Gospels, which, if Cyril's quotations are faith- re as weak and absurd as the answers. Seventeen On Worship in Spirit and Truth,' show that all the al institutions were an allegory of the Gospel; 'a says Dr. Adam Clarke, 'how Scripture may be tor- o say *any* thing.' Thirteen books on the Pentateuch e Prophets are written with a similar view. Thirty Homilies, announcing, as customary at Alexandria, ie of Easter, are 'dull, dry, barren, and perfectly esting.' (Dr. A. Clarke.) Sixty-one Epistles nearly te to the Nestorian controversy. Cyril's Synodical contains 12 solemn curses against Nestorius, who as ly replied with 12 curses against Cyril. In a treatise the Anthropomorphites, or those Egyptian monks ught that as man is made in the express image of his God has the form and substance of a human body, eproves them for their gluttony and idleness, and s with great metaphysical skill a series of very per- queries, such as whether God can cause what *has* ed, *not* to have happened; whether he can cause a te to have been always a virgin; how angels who rits had carnal knowledge of women, &c. Cyril iout his works enforces the adoration of Mary as ther of God, and explicitly teaches the doctrine of stantiation, declaring that by taking the Lord's e become concorporeal with God, being blended to- like two portions of melted wax. 'The history of mong the Christian fathers,' says Dr. Adam Clarke, e disgraceful to the Christian character than that of il, of Alexandria—a man immoderately ambitious, and headstrong; a breeder of disturbances; y, imperious, and as unfit for a bishop as a violent, unskilful theologian could possibly be—but re- hat if the meek inherit the earth, the violent should ossession of the sees.' The editio optima of the Omnia' of Cyril is that in 7 tom. fol., Greek and aris, 1638. Spanheim's edition of Julian's works s Cyril's work against Julian. (Clarke's *Succession t.*, vol. ii., p. 137; Socrates, *ubi supra;* Tillemont, ., p. 272; Butler, *Lives of Saints;* Ceillier, tom. xiii., Rivetus, *Critic. Sac.*)

ILLUS, the author of a Greek Glossary, which ave attributed to the bishop of the same name. It ed in the appendix to the London edition of H. 's Greek Lexicon, 1826.

TANDRA'CEÆ, a small natural order of irregular- l monopetalous Exogens, scarcely distinct from Big- æ by any positive characters, although they have a culiar habit. They are herbaceous plants, and in ses stemless, with no tendency to twine; sometimes parasitical; their calyx, corolla, and stamens are f Bignoniaceæ, but their fruit is a long slender pod, containing a multitude of seeds, that are often terminated by long delicate tails, and are destitute of albumen. The pod is two-celled, and each cell has its placentæ doubled back from the axis so as to form two plates at right angles with the dissepiment. The species inhabit the East Indies chiefly, a few only being met with in other warm parts of the world. They are all beautiful in their flowers, but they are of no known use.



[Streptocarpus Rexii.]

, a section across the ripe pod, showing the double placentæ,

CYRUS I. (Κῦρος), founder of the Persian monarchy, began to reign about B.C. 559. Even in the time of Herodotus the history of Cyrus was so obscured by legendary tales that the truth could not be separated from the fiction. His original name appears to have been Agradatos (Strabo, p. 729 *d.*): the word Cyrus is said to have signified the sun, and this name was probably assumed by him when he became king. (Heeren, *Ideen.*) Cyrus was the son of Cambyses, a Persian, and Mandane, daughter of Astyages, king of Media, and hence was called by the oracle a mule. (Herod. i. 91.) In consequence of Astyages dreaming a dream which portended that the offspring of his daughter would take the throne of the Medes, he ordered Cyrus to be destroyed as soon as he was born. Harpagus, a person of rank in the king's household, was charged with the commission, but being reluctant to execute it, he gave the child to the king's herdsman to put to death. The herdsman's wife, who just at this time was delivered of a still-born male child, persuaded her husband to preserve the life of the royal infant, and their own dead child was accordingly exposed instead of Cyrus, whom they brought up under their own roof. Among his boyish playmates Cyrus exhibited all the royal symptoms of an inclination to command and be obeyed. In their games the youths made him king, and the severity with which he enforced his orders on one of these occasions led to his being brought before Astyages, who recognized in his features a likeness to himself, and found that the time of the exposure of his grandson and the age of Cyrus agreed. The circumstances of his preservation were disclosed, and he was sent to his real parents. Astyages was less enraged against the herdsman than against Harpagus, on whom he wreaked his vengeance by the murder of his son: the youth's mangled limbs were dressed and served up at supper when Harpagus was present, and the head, hands, and feet were afterwards shown to the father in a basket, with insulting expressions. Harpagus said nothing, but meditated revenge; and it was not long before he succeeded in rousing Cyrus against Astyages. Cyrus induced the Persians to revolt against the Medes, and dethroned Astyages B.C. 560. He next attacked and took Sardis, and made Crœsus prisoner B.C. 546. [CRŒSUS.] He besieged and took the city of Babylon B.C. 538, which he entered by diverting the course of the Euphrates and leading his army into the city by the dry bed of the river (i. 190, 191). At last he carried his arms against the Massagetæ, and was defeated and slain by Tomyris, their queen (B.C. 529), who had his head cut off and put into a leathern bag full of human blood, saying, 'Though I am alive and have conquered you, you have undone me by taking my son; but I will, as I threatened, satiate you with blood.' He had reigned twenty-nine years (i. 214). This is the account given by Herodotus, which, with a few variations, is copied by Justin. Xenophon's work on the education of Cyrus is rather an historical romance than a history, and therefore his narrative is less to be depended on than that of Herodotus, from which it differs materially. Both Xenophon and Ctesias (*Persica*, c. 8) [CTESIAS], make Cyrus die quietly a natural death. (See the last chapter of Cicero *De Senectute.*) The account of Ctesias as to his death is conformable with the story in Arrian (*Anab.* vi. 29) of the body of Cyrus being interred at Pasargadæ. [ALEXANDER III., p. 301.) The fame of Cyrus appears to have lasted to the downfall of the Persian empire; he was regarded by his countrymen as their great national hero; and his fame is still preserved in the annals of modern Persia. The Persians gave him the title of father (iii. 89), while they called his son, Cambyses, a tyrant. The capture of Babylon by Cyrus is the point at which sacred history first touches on profane. (Clinton, *Fast. Hel.* p. 301.) Cyrus left two sons, Cambyses, who succeeded him on the throne, and Smerdis, who was murdered by the command of Cambyses. (Herod. iii. 30.)

CYRUS II. was the son of Darius II. and Parysatis. Artaxerxes, the eldest son of Darius, succeeded him as king: but Cyrus disputed the right of succession, and founded his own claim on the fact that he was the first-born after the accession of his father. Cyrus was the favourite of his mother, Parysatis, and was indebted to her intercession with Artaxerxes for the preservation of his life after he had been charged with a conspiracy against the king. He was sent back to his government in the western provinces of Asia Minor, but did not relinquish his designs on Artaxerxes. Indignant at the disgrace he had suffered by being sentenced to death, he resolved, if possible, to dethrone his brother. The great difficulty was to raise a sufficient force without exciting his brother's suspicions. Clearchus, a Lacedæmonian general, undertook to raise a body of Greek troops for the purpose of making war on some Thracian tribes. Aristippus in Thessalia, and Proxenus in Bœotia, raised troops for similar purposes and with a similar object. Artaxerxes had originally been apprized of the designs of Cyrus by Tissaphernes, but the cities which were in the government of Tissaphernes now all revolted to Cyrus, with the exception of Miletus. A war thus arising between Tissaphernes and Cyrus, gave Cyrus a pretext for openly collecting his forces, and even for soliciting the aid of the king, to whom he made heavy complaints of the conduct of Tissaphernes. Artaxerxes was thus blinded to the real aims of Cyrus, who explained his intentions to no Greek but Clearchus, lest they should be deterred from joining him by the boldness of the attempt. When his forces were all collected, he set out from Sardis, the seat of the Persian authority in Western Asia (B.C. 401), without the soldiers knowing any thing more of the objects of the expedition than that he was going to march against the Pisidians, who had infested his province. Tissaphernes however, with his characteristic cunning, saw that the preparations were much too great to be really intended against the Pisidians, and accordingly he went with all expedition to inform the king. Artaxerxes no sooner heard of the armament of Cyrus than he began to make preparations for opposing him. Cyrus in the mean time was continuing his march through the southern provinces of Asia Minor, passing through Celænæ, Peltæ, Thymbrium, Tyræum, Iconium, and Dana, till he arrived at the foot of the Taurus, which he crossed and arrived at Tarsus. Here the Greeks refused to march any farther: they suspected that they were going against the king, and declared that they were hired for no such purpose. The tumult was partially appeased by the influence of Clearchus, who persuaded them to send deputies to Cyrus to inquire what was the real object of the expedition. Cyrus, by an artful evasion, which however was partly seen through by the soldiers, pretended that he had an enemy, Abrocomas, on the banks of the Euphrates, at the distance of a few days' march, and that he was advancing against him. A promise of half as much pay again as they had received before, induced them to proceed; but it was not till some time after that it was openly stated that they were going against the king. At last, on arriving at the plain of Cynaxa, in the province of Babylon, Cyrus found Artaxerxes ready to oppose him with an immense army. Clearchus advised Cyrus not to expose his own person, but he rejected the counsel. As soon as the enemy approached, the Greeks attacked them with such vigour that the disorderly and ill assorted army of the king forthwith took to flight. While Artaxerxes was preparing to attack in the flank, Cyrus advanced against him with a large body of horse, and with his own hand killed Artagerses, the captain of the king's guards, and routed the whole troop. Just at this moment, spying the king himself, and crying out, 'I see him,' he rushed forward and engaged with him in close combat. He killed his brother's horse and wounded the king himself. The king mounted another horse, but Cyrus attacked him again, and gave him another wound, and was in the act of giving him a third, when he himself was slain. The select guards and friends of Cyrus, not choosing to survive their master, killed themselves on his body. With the life of Cyrus ended the cause in which he died, and the Greeks effected their retreat under the command of Xenophon and others. [ANABASIS.] The whole expedition occupied fifteen months.

The character of Cyrus is highly eulogized by Xenophon (*Anab.* i. c. 9). In his childhood and youth he excelled all his companions in those pursuits which belonged to their rank: he was fond of war and hunting. His justice was conspicuous in all his conduct both public and private, and he never suffered the evil-doer to go unpunished. To those who deserved reward for services he was unbounded in his munificence, and his friends received frequent tokens of his kind remembrance. On the whole it was the opinion of Xenophon that no individual had ever secured the affections of a greater number of men whether Greeks or others. According to a passage in Xenophon quoted by Cicero (*De Senectute*, c. 17), Cyrus was fond of agricultural and horticultural labours, and worked with his own hands. (Xenophon, *Anabasis* i.: Plutarch, *Artaxerxes;* Diodorus Siculus, xiv.)

CY'RUS, the name of several, Asiatic rivers, and apparently the same name as that of the Persian conqueror. The Cyrus, now the Kur, flows from the Caucasus into the Caspian Sea (Strab. Casaub., p. 501), and another river of the same name flowed past Pasargadæ. (Strab. 729.)

CYSTI'NGIA (Zoology), a sub-genus of the natural group of *Tunicata*, established by Mr. W. S. Mac Leay, who observes that it comes nearer to *Boltenia* than to any other hitherto described, and that they may prove eventually to be only two subgenera, of which we want the intervening links to enable us to form an accurate notion of the genus to which they belong. The characters, however, adds Mr. Mac Leay, both internal and external, are so different from those given as generic by Savigny to *Boltenia*, that it is impossible to assign it to this group, which indeed has nothing in common with it but externally a pedicle, and internally composite tentacula.

Subgeneric Characters.—External. *Body* with a subcoriaceous test, affixed by the summit to a very short pedicle, which is in the same line with the two orifices. The *Branchial orifice* quadrifid and lateral, the *anal* irregular and terminal; both being so little prominent as not to alter the form of the body. *Anatomical.—Branchial pouch* membranaceous, indistinctly reticulated, and divided into longitudinal folds. The *tentacula* of the branchial orifice composite. *Intestinal canal* lateral. *Stomach* very large, extending almost the whole length of the body. *Ovaries* two, composed of globular ova disposed in free racemes on each side of the body, with the branchial pouch and stomach between them. (W. S. Mac Leay.) Example, *Cystingia Griffithsii*.

Description.—Envelope semipellucid, yellowish. *Mantle* very thin, and provided near the branchial and anal orifices with a reticulation of circular muscles nearly at right angles to each other. *Tentacula* about 10 or 12, compressed and laminated like those of the genus *Boltenia*. *Branchial* pouch having its net-work exceedingly lax, meshes irregular and indistinct, but apparently simple, the nervures being nearly of the same size. The longitudinal folds of the branchiæ, or rather (owing to the singular position of them in this genus) their transverse folds, about 14 or 15 in number. Length of the body, half an inch. (W. S. Mac Leay.) Locality, Winter Island. Mr. Mac Leay, who has named the species after William Nelson Griffiths, Esq., who found only one specimen during the third voyage under Captain (now Sir Edward) Parry, gives the following details of its organization.

'The body of this animal, so different in many respects from all other *Tethyæ*, is pyriform, and attached to a pedicle so short as scarcely to curve down farther than the branchial orifice. This pedicle is rather conical at its base, subcylindrical, and apparently very weak at its extremity. From this apparent weakness and imperfect formation of the pedicle, in conjunction with the circumstance of one side of the conical part in the only specimen that I have seen being incrusted with sand, I suspect that the animal can scarcely be said to be suspended by its pedicle, but rather reposes on the conical part of it; by which means the folds of the branchial pouch will take a vertical, and the stomach a horizontal position, and thus be more in correspondence with the ordinary position of the stomach in the simple *Ascidiæ*, which is very rarely descending. The envelope of *Cystingia Griffithsii* is exceedingly smooth, and so pellucid as to appear almost gelatinous. The original colour I cannot ascertain; but if it be the same as that of the specimen in spirits, it is cinereous, rather yellowish. The external orifices have scabrous veins, are very minute, and scarcely at all prominent. The branchial orifice is quadrifid, and placed exactly half-way down the side. The anal orifice is on the same line with it and the pedicle, but is placed opposite to this last, so as to be terminal, having its external surface apparently without rays; in both respects being totally different from the anal orifice of *Boltenia*.'

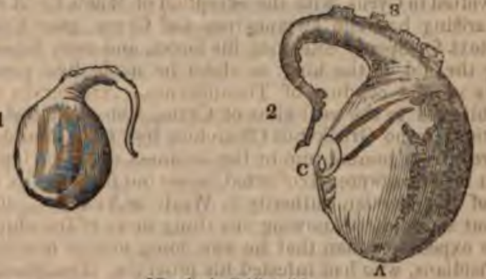
ratory System.—' The entrance of the branchial s provided with a circular range of 10 or 12 unequal la, which are composite or divided into laciniæ at emity, which laciniæ are again so minutely divided almost plumate. The branchial pouch has about , and its net-work is very indistinct and lax, the se nervures being perhaps the most visible, parti- towards the branchial orifice. The folds of the e are most easily seen on the inside of the branchial

lating System.—' The heart is situated horizontally the lower part of the tunic and the stomach. It ovoidal, and appears to be composed of several nd is indeed of a structure different from that of *cididæ* as are known.'

dorsal sulcus is remarkably distinct, and proceeds e immediate vicinity of the heart, or rather along k of it to that of the branchial orifice. It may be rough the external envelope of the body, when this d on the left side, and forms an arch inclosing a nd more pointed arch, which last appears to be else than one of the folds of the branchial pouch. oint where this last arch touches the dorsal sulcus, in our specimen an orifice opening internally, and ly communicating by a tube with a beautifully ous longitudinal pouch, which contains nothing but kish nodules, one of which is longer than the other.' perfection of the only specimen which Mr. Mac d for examination prevented him from accurately ing the nature and use of this part of the organ- which, he says, appears to have nothing similar to of the other *Tunicata* hitherto observed.

tive System.—' The *Pharynx* is situated rather than the branchial orifice; and the *œsophagus*, about half the length of the stomach, after de- to the highest part of the branchial vein, descends, s rise to a simple but enormous stomach, with very nsverse striæ, and having a longitudinal division, omewhat deeply, and which runs almost the whole the body in a line between the base of the pedicle anal orifice. The intestine is exceedingly short, rently descending in a line with the stomach; the s cylindrical, and anus simple. Such at least is iption of the digestive apparatus of this animal, if the name of pharynx to that end of the intestinal ich opens into the branchial cavity, and the name to that end of it which is free; and there is no at such a description makes it an animal totally from *Boltenia*, and in fact from all other species *æ*, not only with respect to the singular form of the canal, but inasmuch as the branchial vein is thus n relation to the pharynx, directly opposite to its in all other animals of this group. I therefore am in some measure to suppose that there is a mon- rmation in the intestinal canal of the only spe- ich I have had the means of examining; a sup- which must of course for the present throw doubt eneric character which might be drawn from the scription of the intestinal canal. If indeed we agine that, were it not for some monstrosity of , the intestinal canal would communicate with the cavity by that end which, from its being free, I n obliged to consider the anus, then the whole of rnal organs of nutrition would have a situation s to that of those of *Boltenia*. For instance, there en be a short œsophagus opening near the anal the envelope, an ascending stomach, a long curved , and descending rectum, while the branchial vein t would take their usual situation in respect to the and stomach. We know moreover, from those of Savigny, to which I have in the course of this d occasion to refer, that the digestive organs of the are subject to analogous derangements, of which figured two remarkable examples in *Cynthia* and *Phallusia turcica*. It appears indeed to be a ace of the low rank of these animals in the scale and of their simple organization, that the organs ly most essential to their existence may undergo est inversions without affecting their life; for the as *Cynthia Momus* described by Savigny, as well *ystingia* now under consideration, had its ovaries ggs.'

ac Leay observes that Pallas, in the *Nova Acta Petropolitana*, has described, under the name of *Ascidia globularis*, a species of this family, which he found during his Siberian journey plentiful on the shallow sandy shores of the Arctic Ocean. The description of Pallas, as Mr. Mac Leay remarks, is vague, and principally differs from the species now under consideration in the size and position of the apertures. It is therefore, Mr. Mac Leay adds, just possible that the species which Pallas describes as being of the size of a large cherry, and attached by a very short peduncle to the fine sand of those shores, the particles of which being agglutinated to its surface, make the animal appear rough, may be identical with *Cystingia Griffithsii*, which would be rather interesting in a geographical point of view; but if both the apertures of Pallas's species be truly terminal, and the position of the peduncle be truly indicated in the figure, it is not only a different species, but probably a very different genus.



[Cystingia Griffithsii.]

1, nat. size, seen on the right side; 2, magnified, seen on the left side; A, anal orifice; C, branchial orifice; S, grains of sand externally encrusting the thick end of the pedicle.

For an illustration of the interesting anatomical details, we must refer to *Linn. Trans.*, vol. xiv., tab. 19, whence the figures and description are taken.

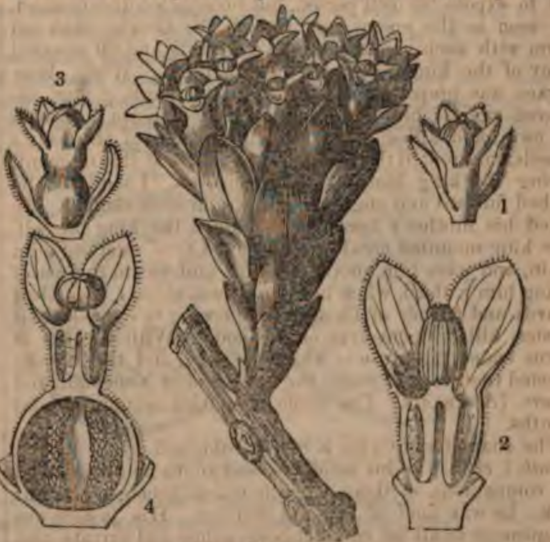
Mr. Griffiths's specimen was taken in Fox's Channel, and two specimens were obtained by the late expedition under Captain Sir John Ross, near Felix Harbour; but as these were abandoned with the rest of the collection, it is probable, as Captain James Ross observes, that the individual from which Mr. Mac Leay's description and drawings were taken is the only specimen ever brought to England.

CYTHE'RA. [CERIGO.]

CYTHERÆA. [VENERIDÆ.]

CYTHERI'NA. [BRANCHIOPODA, vol. v., p. 341.]

CYTINA'CEÆ, a small natural order of Rhizanths, the type of which is Cytinus Hypocistis, a parasite found growing on the roots of certain kinds of Cistus in the south of France. Its stems are a few inches high, thick, succulent, reddish or yellowish, and covered by straight fleshy imbricated scales which are only abortive leaves. The flowers are nearly sessile, erect, arranged at the summit of the stem, yellowish and velvety on the outside. The fruit is baccate, inferior, leathery, divisible into eight polyspermous lobes. The inspissated juice is used in French phar-



[Cytinus Hypocistis.]

1, a male flower; 2, a section of the same, very much magnified; 3, a female flower; 4, a section of the last.

macy as a styptic, but it is not admitted with us. Along with this genus are associated the curious genus Hydnora, Cape of Good Hope, which looks like a great star of the Lycoperdon, Apodenthus, a minute parasite upon the branches of trees, and two other less known genera.

CY'TISUS, a genus of hardy papilionaceous shrubs, natives almost exclusively of Europe and the temperate parts of Asia, bearing ternate leaves, and with one exception, *C. purpureus*, yellow flowers. The species are common ornaments of our gardens; the most remarkable are the two kinds of Laburnum, *C. Laburnum* and *C. Alpinus:* these two plants form small well-known trees, which in spring are loaded with their numerous bunches of yellow flowers. They have a handsome hard olive-green wood, well adapted for the purposes of the turner; both are natives of the Alps of Europe, and are much alike; but *C. Alpinus* has the broader and more shining leaves of the two, and is much the handsomer plant. It is not a little singular, that the seeds of these species, in an order of plants usually wholesome, are decidedly and dangerously poisonous, owing to the presence of the deleterious alkaline principle called Cytisine.

The Cytisus of Virgil was the Medicago arborea of botanists.

CY'TISUS SCOPA'RIUS, or **BROOM**, a shrub extremely common on uncultivated ground, heaths, &c., of most parts of Britain. The young tops or twigs when bruised, have an unpleasant odour, and a disagreeable nauseous taste. The seeds are emetic, and probably contain cytisine, an alkaloid found in the seeds of the Cytisus Laburnum, which possesses emetic, and, in large doses, poisonous properties.

Broom-tops boiled in water form a decoction which acts both on the bowels and kidneys. It is unquestionably a valuable diuretic, and many obstinate cases of dropsies have yielded to the use of this indigenous remedy which had resisted other means. Its diuretic properties may be increased by the addition of juniper berries and dandelion, to form the decoction, as now directed in the Pharmacopœia, and by adding to each dose, acetate, tartrate, or bitartrate of potash.

CY'ZICUS (Κύζικος), an antient town of Asia Minor, built on an island in the Propontis near the coast of Mysia, which was joined to the main land by two bridges. An isthmus has gradually formed itself, and the island is become a peninsula. It is said to have been a Milesian colony, formed in the eighth century B.C. Strabo (Casaub. 675.) speaks of Cyzicus as worthy of being numbered among the first cities of Asia for its size, beauty, and splendour, and for the goodness of its laws. It became early allied to Rome, and remained faithful in its alliance. It withstood all the power of Mithridates who besieged it, and the brave resistance of the citizens gave time to L. Lucullus to come up with his army and drive him back into Pontus. The Romans, grateful for the fidelity of Cyzicus, not only respected its liberties, but gave it an increase of territory, which extended, according to Strabo, to the east, as far as the lake Dascylitis, and to the west, beyond the Æsepus into Troas as far as Adrasteia. To the south, it reached Miletopolis. The town of Cyzicus was built partly on the seacoast, and partly on a hill; its site has been described by Pococke and Sestini; there are some remains, and among others, an amphitheatre. On the same island, west of Cyzicus, was another Greek colony called Artace.

[Coin of Cyzicus.]

British Museum. Actual size. Bronze. Weight, 229 grains.

CZAR, or **TZAR**, the Russian title of the monarch of Russia. Some have supposed it to be derived from Cæsar or Kaisar, but the Russians distinguish between Czar and Kesar, which last they use for emperor. The sovereign of Russia styles himself also Autocrat of all the Russias. It is only since the time of Peter the Great that
of emperor has been given to him by the senate, an
wards by the other courts of Europe. Before Pete
the sovereign of Russia was styled grand duke
ropean diplomacy. The consort of the czar is styled

CZASLAU, a circle in the eastern part of the ki
Bohemia, bounded by the circles of Chrudim, Kaur
Tabor, and the margraviate of Moravia. Its area
1260 square miles, and it contains nine towns,
Deutsch-Brod (4450 inhabitants), Kuttenberg (800
Humpoletz, Chotiberg (2000), Przemislau (1400
(1800), and Golz-Jenikau, 33 market towns, and
lages. The population is about 234,260: in 181
187,120. The surface is undulating, with numero
except on the side next Moravia, where it is mou
In the northernmost parts it is intersected by t
which is here increased by the Dobrava; and f
to east it is traversed by the Sazova. Much corn
are raised; it yields timber, silver, iron, saltpetre,
and other precious stones, &c.; and has wooll
paper, &c. manufactories.

CZASLAU, the chief town, lies in a fert
in 49° 52′ N. lat. and 15° 25′ E. long. It is an
town, has a collegiate church, embellished with th
steeple in Bohemia, a public school, manufacture
petre, linens, &c. and it contains about 3400 inh
The monument in memory of J. C. von Trocznow, m
monly called Ziska, the celebrated leader of the
who died in 1424, was once in the church, but al
of it has been removed.

CZEGLE'D, a large market-town in the county
in Hungary, and circle of Ketskemét, is the pro
the established or Roman Catholic church. It
47° 10′ N. lat. and 19° 48′ E. long., has a Roman
and Protestant church, several handsome buildi
contains about 13,050 inhabitants, 8500 of whom a
testants and 4400 Roman Catholics. The country
it is well cultivated, and produces much grain and
quantity of common red wine. The breweries a
siderable.

CZERNIGOF, or **TSHERNIGOF**, formerly pa
Ukraine, is at present one of the three governm
that part of the south of Russia in Europe which is
Little Russia. It lies between 50° 20′ and 53° 2
and 30° 10′ and 34° 40′ E. long. It is bounded
governments of Mohilef, Smolensk, Orel, Kursk,
Kief, and Minsk, and contains an area, according
mann, of about 27,000 square miles, which,
Wichmann reduces as low as 20,920 and Arsenief to
The general character of the surface is a level, occ
interrupted by hills, and rising into high land a
proaches the elevated banks of its south-west bo
the Dnieper. With the exception of some sandy
the subsoil is sand or clay, which is well cover
rich loam, and presents a succession of luxuriant
and pasture lands. On the banks of the Dnie
chalk, slate, and clay alternate, but slate predo
Most of the streams which water Czernigof empt
selves into the Dnieper, particularly the Desna,
gable river, which enters the country in the
from Orel, and traverses it nearly in its whole len
south-westerly direction. The waters of the Desna
creased by those of the Snof, Ostre, Seim, and Sud
Sofda also flows through the northernmost, a
Trubesh through the southernmost districts. C
abounds in small streams, and in natural sheets o
none however large enough to be called lakes;
mineral springs, but they have not been brought
The climate is dry, mild, and salubrious; but the
of late years suffered from the inroads of locusts
culture and grazing constitute the principal pursu
inhabitants; corn of all kinds, particularly rye, bar
oats, are grown, and the yearly produce is estim
three millions of quarters, of which upwards of two
are consumed in the country itself. Hemp in lar
tities, flax, tobacco, peas and beans, linseed, and
also raised. Vegetables, melons, and the commo
of fruit are plentiful, but the grape does not rip
ciently for wine. There is here a peculiarly fine s
the cherry, called Tsherasun, from which brandy a
are obtained. The woods and forests yield an ab
of excellent timber, charcoal, potash, and tar. Ho
cattle are reared in great numbers; the horse

ll, active, and hardy breed of the Ukraine, and well pted for the use of light cavalry, and there are fine ls kept, particularly by Count Rasumofsky. The ox is fine race, and fattens readily; this animal here per- s the labour of the plough exclusively. Large herds of p and swine are kept. Much honey and wax are le. Of minerals, Czernigof possesses iron, alum, salt- e, porcelain earth, potter's-clay, chalk, and slate.

ccording to the census of 1796, the twelve circles of h Czernigof was then composed, contained a population ,013,600 souls; its present amount is estimated at 0,000. The average increase during the three years , 1826, and 1827, was 49,121 in each year. There are ely any serfs in this government. The Greek is the ominant form of faith, and ecclesiastical affairs are eted by the archbishop or eparch of Czernigof and hin, who has 1016 parishes under his jurisdiction.

he inhabitants mostly make their own clothing and sils. There has, however, been an improvement in respect; in 1808 the whole country could not produce e fifteen manufactories, but in 1830 the number had eased to seventy-seven, which gave employment to 3095 atives. The fondness of the people for ardent spirits occasioned the establishment of a great number of illeries. There is some internal trade, which mostly tres at Neshin, where four large fairs are held in the rse of the year. The exports, consisting principally of es, cattle, swine, tallow, wool, skins, bristles, grain and al, honey and wax, potash, hemp and hempseed, and andy, are considerable.

Czernigof is one of the privileged governments, the tient prerogatives of the nobility having been confirmed them in 1802, and the Cossack inhabitants enjoying the vilege of distilling brandy in any spot they please, with- t its being deemed an infringement on the crown mono- y. The governor-general of Little Russia is at the head the local administration of Czernigof, as well as Pultava d Kief, and the revenues of the government are said to oduce about 200,000*l.* sterling per annum.

The country is divided into the fourteen circles of Czer- gof, Gorodnia (capital Gorodnick on the Gorodna, three rches, and about 1300 inhabitants), Sosniza (capital of same name, at the confluence of the Ubeda and Desna, 00 inhabitants), Koselez (capital Koselez, on the Oster, 00 inhabitants), Neshin (capital Neshin, on the Oster, een churches, and upwards of 10,000 inhabitants who ry on a large trade), Borsna (capital Borsna, on the river sna, about 1000 inhabitants), Konotop (capital Konotop, the Yesatsha, about 1000 inhabitants), Gluchof (capital uchof, on the Irsmen, twelve churches, and about 9000 habitants), Novgorod-Seversk (capital Novgorod-Seversk, the Desna, 8000 inhabitants), Starodub (capital Staro- b, on the Babinga, about 4300 inhabitants), Novomiasto pital Novomesto, on the Iput, about 1100 inhabitants), lin (capital Mglin, on the Sudenka, four churches and out 2500 inhabitants), Souragia, and Krolevertz.

CZERNIGOF, the capital of the government, is situated the elevated banks of the Desna, in 51° 27′ N. lat. and 15′ E. long. It is surrounded by a rampart of earth ich is now converted into walks. It was built in the r 1024, and is accounted the oldest town in European ssia. In its centre stands a high hill with a castle on its mit: it has several churches, among which is the cathe- l, a well-built edifice, in which the remains of St. Theo- ius are deposited. There are also four monasteries, a nasium, an ecclesiastical seminary, with a printing blishment attached to it, an Imperial orphan asylum, a ng-school, a mechanics' school for 400 pupils, and several blishments for the indigent. Usevoloisky states the ulation to be about 7000, but others carry it as high as 00; the inhabitants are chiefly employed in retail trade mechanical pursuits, and manufacture small quantities voollens, linens, leather, and soap. Four markets are l here in the course of the year. It is the residence of archbishop of the diocese or eparchate.

ZERNOVITZ or CZERNOVICS, one of the counties ircles of the kingdom of Austrian Galicia; it formerly stituted what was called 'the Buckowine,' being that tion of Moldavia which the Porte ceded to Austria in year 1777. This country, though now incorporated h Galicia, has retained its old legislative institutions. Moldau borders it on the south and east, and Tran- ania on the south-west. Its surface, which comprises area of about 3090 square miles, is intersected in all parts by well-wooded branches of the great Carpathian range. The intervals between the lines of mountains are broad and productive valleys, fertilized by the Pruth, Sereth, Moldau, Czeremosh, Suczava, Golden Bistriza, &c., and yield rich crops of corn, flax and hemp, potatoes, and fruit. Grazing is also carried on upon an extensive scale. The forests abound in beeches, pines, and firs, which afford valuable timber, but the oak is of very partial growth. The Buckowine is rich in minerals, particularly salt, which the works at Karzike alone produce in sufficient quantity to supply its whole consumption. The gold-dust of the Bistriza does not at present yield enough to defray the cost of collecting; but silver, lead, copper, and iron, are obtained from the mines near Kirlibaba (about 560 marks of silver, and 50 tons of lead), Posczoryta about 1000 cwt. of copper, and Jacobeny about 1200 tons of iron. There are three glass-works, and several potash manufactories and brandy distilleries, in this county. The Buckowine was in a very wild and barbarous state when it was first annexed to the crown of Austria, but has been rapidly advancing in civilization and prosperity ever since. The inhabitants differ both in descent and religion from their Galician neighbours; they are chiefly of Wallachian extraction, and profess the Greek religion. A vast number of Armenians, Jews, Hungarians, and Germans, besides about 8000 Philippones from the Crimea, who sought refuge here in Joseph II.'s time, and settled in and around Dragowesna, have intermixed with them. The whole population in 1817 amounted to 201,319, and consisted of 41,864 familes; in 1825 it was 261,162; and at the present day it is about 280,000. Of municipal towns there are 3; market-towns 3; and villages 274. The three municipal towns are Czernovitz, the capital; Suczava, with 4 churches, a synagogue, and about 5200 inhabitants; and Sereth, with 3 churches, and about 3100 inhabitants.

CZERNOVITZ, the capital of the Buckowine, and of the present circle of Czernovitz, is situated on a hill close to the right bank of the Pruth, in 48° 25′ N. lat., and 25° 39′ E. long. In the centre of the town is a spacious square, with the main street passing directly across it. Although there are many handsome private houses and public edifices, such as the Greek cathedral, the Roman Catholic collegiate church, the hospital and government buildings, &c., Czernovitz itself is an indifferently constructed town, and the remote quarters are composed of narrow rows of low wretched hovels. The number of houses is about 900, and of inhabitants about 7300, including above 1200 Jews. Czernovitz is the residence of a Greek bishop, and seat of a Greek consistory; it has a philosophical academy, conducted by a director and seven professors, a gymnasium, a head district school, an ecclesiastical seminary, courts of justice, &c. Mechanical pursuits, and a considerable trade in native and other productions with Moldavia, Wallachia, and various quarters of Germany, contribute greatly to the prosperity of the town.

CZIRKNITZ (ZIRKNITZ), a market-town in the circle of Adelsberg, duchy of Carinthia, in Illyria. It lies on the Brohitza, contains 240 houses, and about 1,300 inhabitants, who are occupied in fishery, and in salt and tile-making: 45° 38′ N. lat., 14° 25′ E. long.

Near it is the singular lake of the same name, in closed within limestone mountains of very grotesque outlines. The lake in dry seasons is from 12 to 15 miles in circumference, and when quite full about 24 miles; its entire area is then about 63 square miles. Its form however is made very irregular by numerous bays, capes, and islands. At the foot of the Javoring, which rises on its southern bank, the peninsula of Dervoseck stretches far into the lake; on the west is the island of Vorneck, on which is the village of Ottock, the inhabitants of which cultivate millet and vegetables. While passing over the more shallow parts, the rocky bottom of the lake presents a very dark appearance, occasioned by numerous funnel-shaped cavities of various dimensions. All these cavities have peculiar and for the most part significant names; such as Kottu (the kettle), Betscheck (the tub), Reitie (large corn sieve), Rescheto (coarse sieve), Sittarza (fine meal sieve), Vadonos (water carrier), &c. Its depth, compared with other lakes, is inconsiderable: the Cave of Rescheto, the deepest part of the whole lake, is at the lake's mean height only 56 feet; Vadonos 50, Velka Bubnarza 45, Kottu 38; the others are from 29 to 6 feet deep. The lake is remarkable for great variation in the height of its water which is owing to the nature of the limestone rocks. The bottom of the lake, especially of the funnels, is full of clefts and fissures, through which the water passes at forty different openings into subterranean caverns and channels, and reappears under the form of the Bistriza and Baronniza in the valley of Laibach. During the dry season, which generally occurs in autumn, the bottom of the lake is covered with luxuriant herbage, which is made into hay. Only a very small portion of the lake however is susceptible of cultivation; millet and buck-wheat are sown, which ripen in six weeks; but as the waters of the lake frequently do not subside for three, or even more years, the sowing and harvest are of course very irregular. In January, 1834, the waters left the lake, and did not return till March, 1835. During the interval grain and vegetables were sown and gathered, and cattle grazed on the bottom of the lake—an occurrence which, for the long cessation of the waters, is said to be unprecedented.

The lake abounds in fish, chiefly pike and the *Cyprinus tinca*, Lin.: they are caught in pits, at the rising of the lake, with drag and small hand-nets, and are sent alive to Laibach and other places, or dried. The lake is also frequented by numerous aquatic fowl, which, like the fishery, form an important means of subsistence to the inhabitants. In the environs of the lake, which are exceedingly picturesque, are nine villages, twenty churches, and two castles.

CZORTKOV, a county in the kingdom of Austrian licia, having Russia for its eastern boundary, and Mol and the Buckowine for its southern. Its area is about square miles; and its population, which was 149,4 1817, is at present upwards of 176,000. With the exce of a tract between the Pruth and Dniester, once part o Buckowine, its surface is a uniform level, fertilized b waters of the Sered, Striva, Dzurym, Dupa, and rivers, and highly productive, particularly in most kin grain, tobacco, aniseed, and maize: there is abundan timber; but the breeding of cattle is neglected. Wax honey are made in great quantities. Manufacturing dustry is limited to coarse woollens. Zaleszczyky, an built place, but beautifully situated on the Dniester 48° 53′ N. lat., and 25° 45′ E. long.), is the chief tow has a chapter-house, collegiate church, Protestant pla worship, monastery and head school: the populatio about 5500, including about 3150 Jews. The second is Czortkov, on the right bank of the Sered, with a ca and government tobacco manufactory, a monastery, about 2300 inhabitants; and the third town is Husiaty the Podhorze, with an old castle, and about 1540 inh ants, two-thirds of whom are Jews. Besides these, circle contains 19 market-towns, and 242 villages.

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D.

D, which occupies the fourth place in the Hebrew alphabet and those derived from it, is the medial letter of the order of dentals or palato-dentals. It readily interchanges with those of the same organ. The German language and the English offer an abundance of examples.

1. *D* in German corresponds to *th* in English, as *dein*, thine; *denk-en*, think; *du*, thou; *dieb*, thief; *donner*, thunder; *dorn*, thorn; *durch*, through; *tod*, death; *bruder*, brother; *erde*, earth; *leder*, leather, &c. And on the other hand, *th* in German, which however is not pronounced as among us, corresponds to *d* in English, as *thau*, dew; *thal*, dale; *thaler*, dollar; *thu-n*, do; *that*, deed; *theil*, dole and deal; *roth*, red; *noth*, need; *muth*, mood.

2. *T* in German to *d* in English, as *tag*, day; *taub*, deaf; *taube*, dove; *tief*, deep; *traum*, dream; *tod*, death; *brot*, bread; *breit*, broad; *wort*, word; *bart*, beard.

3. *D* in Latin to *z* or *ss*, or *s* final in German, and *t* in English, as *decem*, *zehen* or *zehn*, ten; *digitus*, *zehe*, toe; *duo*, *zwey*, two; *dingua* (the same as *lingua*), *zunge*, tongue; *dens* (*dent*), *zahn*, tooth; *cor* (*cord-is*), *herz*, heart; *duc-ere*, *zieh-en*, tug; *doma-re*, *zahm-en*, tame; *sud-or*, *schweiss*, sweat; *pes* (*ped-is*), *fuss*, foot; *ed-ere*, *ess-en*, eat; *clud-ere*, *schliess-en*, shut; *od-it*, *hass-en*, hate; *quod*, *was*, what; *id*, *es*, it; *grandis*, *gross*, great.

4. *D* is interchangeable with *l*, and this most freely. Compare the Greek forms Οδυσσευς, Πολυδευκης, δαψιλης, δακρυ-ω, δε-ω, with the Latin *Ulixes*, *Pollux*, *lapsilis*, *lacruma*, *liga-re*. In the Greek language itself compare ἑδω with ἑλλος, ἑαλος with ἑδς (ἑδε-ος); and in the Latin, *sella*, *scala*, *mala*, *valla*, with the verbs *sed-e-o*, *scand-o*, *mand-o*, *vad-o*. *Vesidia* and *Digentia*, two small streams of antient Italy, are now called respectively *Versiglia* and *Licenza*. So the Italians say either *edera* or *ellera* for ivy; and the Latin *cauda*, a tail, is in Italian *coda*, in Spanish *cola*. But one of the most remarkable instances of this change exists in the words *eleven* and *twelve*, in both of which the *l* has grown out of a *d* in *decem*. In the same way, while the Greek has δεκα for ten, the Lithuanian prefers *lika*; and of two Sanscrit dialects, one has *dasan*, the other *lasan*, for the same numeral.* The people of *Madrid* call themselves *Madrilenos*.

5. *D* attaches itself to the letter *n*. Thus we find Gr. τειν-ω, and Lat. *tend-o*, stretch; Lat. *canis*, Eng. *hound*; Lat. *sonus*, Eng. *sound*: Lat. and Gr. root μεν or *men*, Eng. *mind*; Ger. *abend*, Eng. *even* or *even-ing*; Ger. *donner*, Eng. *thunder*; Ger. *niemand*, Eng. *no-man*. And our English term *husband*, is a corruption of *house-man* (Lat. dominus). This *d* is particularly apt to insert itself after an *n* when an *r* follows. Thus from the Latin *ciner-is*, *gener*, *tener*, come the French *cendre*, *gendre*, *tendre*. And the latter language has the futures *viendrai*, *tiendrai*, where analogy would have led to *venir-ai*, *tenir-ai*.

6. *Di* before a vowel is changed into a *g* or *j*, as *Dianus* or *Janus*, the god of light (dies) in Roman mythology; *Diana* or *Jana*, the goddess of light. So *Diespiter* and *Jupiter* are the same name. The Latin *hodie* is in Italian *ogge*. Sometimes a *z* is preferred to a *g*, especially in the Greek, Italian, and German languages. In the Greek, for example, ζα is used for δια; hence ζαω, *vivo*, and διαιτα, are connected, and the same town on the African coast is called indifferently *Hippo Zarytus* or *H. Diarrhutos*.

7. *Du* before a vowel is changed into *b* or *v*. [See B.] With this principle is connected the change of *d* into *v*, in the words *suavis*, *suadeo* and ἀδυς, *clavis* and *claudo*, and the river *Suevus* or *Oder*.

8. Instances occur where *d* is interchanged with both the other medials; with *b*, as in Latin *barba*, *verbum*, English *beard*, *word*; with *g*, as in the Greek Δημητηρ from γη μητηρ, πηδος, 'the beech,' as well as φηγος, and in the two names of the African city, Καρχηδων and *Carthago*. One may often hear in the mouths of children *dood* for *good*, and *do* for *go*.

9. *D* when flanked by vowels often disappears in the transition of words from Latin into French. Compare *Melodunum*, *Ludovicus*, *vadum*, *vādis*, *medius*, *fides*, *nudus*, *cauda*, *assidere*, *videre*, with *Melun*, *Louis*, *gué*, *vas*, *mi*, *foi*, *nu*, *queue*, *asseoir*, *voir*.

For the forms of the letter D see ALPHABET.

D as a Roman numeral signifies five hundred. It is more correctly written IↃ. [NUMERALS.]

D (in Music), the second note or degree of the diatonic scale, answering to the *re* of the Italians and French.

DABCHICK. [DIVERS.]

DA CAPO (from the head, or beginning), an Italian musical term, signifying that the first part, or strain, is to be repeated, and to conclude at the sign of the pause (𝄐), or at the word *fine*. The phrases in use are, *Da Capo al fine*, and *Da Capo al segno*: *i.e.*, 'From the beginning (or over again) to the *fine*,' or 'to the sign.' This term is abbreviated by the letters D. C.

DACCA JELALPORE (Dhaka), one of the districts into which the province of Bengal is divided; it lies between 23° and 25° N. lat., and between 90° and 91° E. long., and is bounded by the district of Mymunsingh on the north, by Tiperah on the east, by Tiperah and Backergunge on the south, and by Rajeshahy and Jessore on the west. The limits of this district were much more extensive before the year 1800 than they are at present, reaching as far south as the sea, and as far north as the Garrow mountains. It then contained an area of more than 15,000 square miles, but it is now reduced to somewhat less than 6000 square miles. The surface of this district is uniformly low and level, and being intersected by the Ganges and Brahmapootra, a great part of the lands are periodically covered with water by the overflowing of those rivers during the rainy season. At these times the villages which are built on artificial embankments have the appearance of small islands. The deposits left by these inundations fertilize the soil. The lands are only partially cultivated: towards the north and west are very extensive tracts of jungle in which are great numbers of wild elephants which cause much damage to the neighbouring farmers, and prevent the extension of cultivation. Towards the south and the east nearly seven-eighths of the land are under cultivation, producing rice, betel-nut, hemp, cotton, and sugar. The abundance of the rice harvests has caused the district to be called the granary of Bengal.

Dacca is principally known in Europe for its manufactures of cotton goods. The striped and figured muslins of Dacca were long celebrated throughout the world. The beauty and delicacy of these fabrics were once unrivalled, but of late years the weavers of Paisley and Manchester have so successfully competed with those of Dacca, that a large proportion of the families in that district, who have for many generations employed themselves in their production, have been compelled to adopt other pursuits. Another reason for this change may be found in the altered condition of the former lords of the country, among whom the curious fabrics of Dacca were held in the highest estimation, and who are now unable to gratify their taste for expense.

The ruins of antient mosques and Hindoo temples are spread all over the country; and in many places are seen the remains of fortresses constructed to oppose the invasion of the Mughs, but they are all now dilapidated and the cannon rendered useless. The settled estates are mostly parcelled out into small talooks, or Zamindaries, and these are divided and sub-divided into very insignificant farms. The principal towns are Dacca, Rajnaghur, Narraingunge, Furreedpore, and Soonergong. Rajnaghur stands on the east side of the Puddah, the grand outlet of the Ganges, in 23° 22′ N. lat., and 90° 25′ E. long., 23 miles south by west from Dacca: Narraingunge stands on the west side of a branch of the Brahmaputra, about 8 miles south-east from Dacca, in 23° 37′ N. lat., and 90° 35′ E. long. This town contains a population of more than 15,000 souls, and is one of the greatest inland places of trade in Bengal. Salt, tobacco, indigo, and grain, are the principal objects of this trade. Numerous indigo factories are established on the banks of the river where the soil is favourable for the growth of the indigo plant. On the opposite, or east side of the river, is a Mohammedan mosque, to which great numbers of devotees resort from the neighbouring towns to see what is described as the foot-mark of the prophet of Mecca. Similar foot-marks are shown in several other places in India, and impart a peculiar sanctity to the buildings in which they are placed. Furreedpore is situated on the south side of the Puddah, or great Ganges, five miles from its banks, and 40 miles from Dacca: it is the residence of the principal civil and judicial officers for the district. Soonergong stands on one of the branches of the Brahmapootra, in 23° 39′ N. lat., and 90° 43′ E. long., about 13 miles south-east from Dacca. This is said to have been in antient times a large city, and the seat of government before the building of the town of Dacca; it is now little more than a village; it was long celebrated for its manufacture of beautiful cloths, some of which are still made in the village.

The entire population of the district was stated in 1801 to be 938,712; one-half were Hindus and the rest Mohammedans. The condition of slavery is recognized, and slaves are sold and conveyed by deeds of sale, which are registered in the courts of justice in the same way as other conveyances of chattels are registered.

DACCA, the capital of the district just described, is situated on a branch of the Ganges, called the Booree Gunga (old Ganges), about 100 miles above the mouth of the river, in 23° 47′ N. lat., and 90° 17′ E. long. Dacca is comparatively a modern town. In 1608 the seat of government was removed to it by Islam Khan, then governor of Bengal; in compliment to the emperor, the name of the place was then changed from Dacca to Jehangire Nuggur. It is related that in 1689 rice was sold in the market of Dacca at the rate of 640 pounds for one rupee, and that to commemorate this fact the western gate was built up by order of the viceroy, Shaister Khan, and an inscription placed on it forbidding the re-opening of the gate until the price of this main article of food should be again equally low. Dacca was formerly a much more extensive place than it is now, and in the reign of Aurengzebe exhibited a considerable degree of splendour. The former limits of the city contain the ruins of many magnificent buildings, such as bridges, mosques, and palaces, but the places where these occur are for the most part overrun with jungle. Including the suburbs the town occupies a space six miles long, on the bank of the river, but it is not wide in proportion. The streets are narrow and crooked, and the houses, for the most part, are mean buildings. The native population in 1801 was estimated at about 200,000 souls, rather more than one-half of whom were Mohammedans and the rest Hindus. There are several Portuguese, Greek, and Armenian merchants settled in the place. In 1823 a society was formed for the support of Christian, Persian, and other native schools for males and females in the city of Dacca and its vicinity. This society took under its charge six schools, and in three years increased the number to twenty-five, which were attended by 1414 scholars. After a few years the funds of the society fell short, in consequence of their support being withdrawn by the wealthy natives. Under these circumstances a donation was made to the society by the government, but by no means equal to its wants, and the schools have in consequence greatly fallen off in numbers and efficiency.

DACE. [LEUCISCUS.]

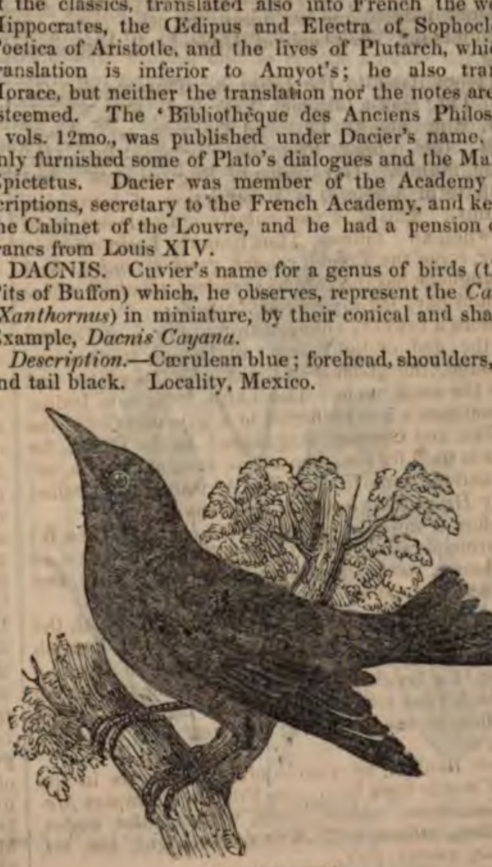
DA'CELO. [KINGFISHERS.]

DA'CIA, the antient name of a country north of the Danube and south of Sarmatia, bounded on the east by the Pontus Euxinus, and on the west by the Tibiscus, now the Theiss. It was divided into Dacia Ripensis, Dacia Alpensis, and Dacia Mediterranea. The antient Dacia comprehended the modern Transylvania, Wallachia, Moldavia, and Bessarabia. The Daci were antiently called Davi, according to Strabo (p. 304, *c.*), and hence, he adds, the name Davus was commonly applied to a slave in Attica, many of the Athenian slaves being imported from the countries about the Danube. This appears from the plays of Terence, which were translated from the Greek, or at least founded on a Greek model. The change of the name has been explained in another place. [C, 2nd column.] The country was inhabited by the Daci and the Getæ: the Daci occupied the part towards Germany and the source of the Danube; the Getæ occupied the part towards the east and the Pontus. (Strabo, p. 304, *c.*) Both the Getæ and Daci spoke the same language. (Strabo, p. 305, *a.*) The Getæ were better known to the Greeks in consequence of their frequent migrations to the banks of the Danube. The Latin name Daci included the Getæ. The principal river of Dacia is the Tibiscus, which, with its tributary the Marisus, falls into the Danube. There are several small rivers besides, the Aluta (the Alt), the Aravus, and others, which also fall into the Danube. The first expedition of the Emperor Trajan was against the Daci, headed by their king Decebalus, and the war, which lasted nearly five years, ended in their submission A.D. 105 (Dion Cassius, lxviii.) to the Roman power. One of their chief towns, Sarmizegethusa, was afterwards called Ulpia Trajani, in memory of the victory which was gained. In A.D. 250 Dacia was overrun and conquered by the Goths, to whom it was afterwards resigned by the Emperor Aurelian. Domitian celebrated his pretended exploits against the Dacians by assuming the title Dacicus. (Juvenal, *Sat.* vi., 204.)

DACIE'R, ANDRE', was born at Castres in 1651, studied at Saumur under Tanneguy le Fèvre, whose daughter Anne he married in 1683. Both husband and wife became eminent among the classical scholars of the seventeenth century. They were employed with others to comment upon and edit a series of the antient authors for the dauphin, which form the collection 'Ad usum Delphini.' Madame Dacier's commentaries are considered as superior to those of her husband. She edited Callimachus, Florus, Aurelius Victor, Eutropius, and the history which goes by the name of Dictys Cretensis, all of which have been repeatedly reprinted, with her notes. She published French translations of the Amphitryon, Rudens, and Lepidicus of Plautus, with a good preface, of the comedies of Terence, of the Plutus and the Clouds of Aristophanes, and of Anacreon and Sappho. She also translated the Iliad and the Odyssey, with a preface and notes. This led to a controversy between her and La Motte, who had spoken slightingly of Homer. Madame Dacier wrote, in 1714, 'Considérations sur les Causes de la Corruption du Goût,' in which she defended the cause of Homer with great vivacity, as she did also against Father Hardouin, who had written an 'Apology of Homer,' which was more a censure than an apology. The warmth however with which both the Daciers resented anything that was said against the antient writers was carried to the extreme, and had at times something ludicrous in it. But Madame Dacier's enthusiasm was real, and unaccompanied by pedantry or conceit. Neither did her learned lucubrations make her neglect her domestic duties as a wife and a mother; and she was generous and charitable towards the poor. She died in 1720, and her husband in 1722. The latter, besides his editions of the classics, translated also into French the works of Hippocrates, the Œdipus and Electra of Sophocles, the Poetica of Aristotle, and the lives of Plutarch, which last translation is inferior to Amyot's; he also translated Horace, but neither the translation nor the notes are much esteemed. The 'Bibliothèque des Anciens Philosophes,' 9 vols. 12mo., was published under Dacier's name, but he only furnished some of Plato's dialogues and the Manual of Epictetus. Dacier was member of the Academy of Inscriptions, secretary to the French Academy, and keeper of the Cabinet of the Louvre, and he had a pension of 2000 francs from Louis XIV.

DACNIS. Cuvier's name for a genus of birds (the Pit-Pits of Buffon) which, he observes, represent the *Carouges* (*Xanthornus*) in miniature, by their conical and sharp bill. Example, *Dacnis Cayana.*

Description.—Cærulean blue; forehead, shoulders, wings, and tail black. Locality, Mexico.



[Dacnis Cayana.]

This pretty little bird is the *Elototoll* of the Mexicans. Hernandez says that it lives about the trees of the Tetzcocan mountains; that it is eatable; that it does not sing, and that therefore it is not kept in the houses of the inhabitants.

DACTYL is the name of a metrical foot consisting of a long and two short syllables, as the Latin word *littora;* or of an accented syllable followed by two unaccented, as *gallery.*

DACTY'LICS. To this term belong all those metres which consist of a repetition of dactyls or equivalent feet. The long syllable may be the first in the line, as it is in the heroic verse of Homer; or it may be preceded by one or two short syllables. Thus the modern anapestic verse is strictly a dactylic metre, as—

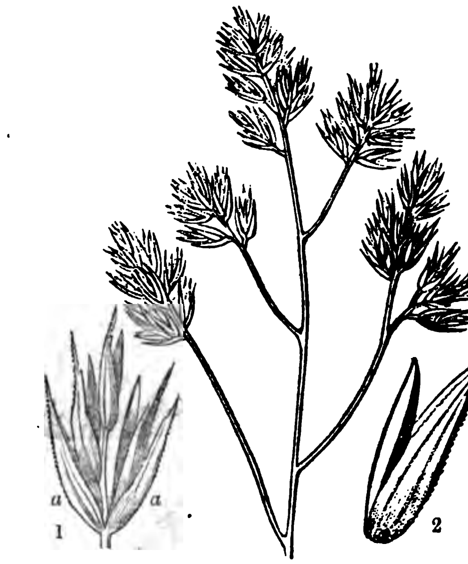
'If he ha'd any fau'lts, he has le'ft us in dou'bt.'

Of the dactylic metres the most common are the hexameter, which, as its name implies, consists of six feet [HEXAMETER], and the pentameter, of five feet.

The dactylic metre often alternates with trochaic measures. Such is the case in the sapphic and alcaic stanzas.

DA'CTYLIS GLOMERA'TA, or Cocksfoot grass, is an extremely common plant in fields and waste places, growing and flowering during a great part of the summer. It has, in its wild state, a coarse bluish rough herbage, and a flower-stem about three feet high, divided at the point into a loose panicle, each of whose divisions bears a cluster of flowers at its end. The glumes are two, sharp-pointed, keeled, and rather unequal; they enclose from three to six florets, each of which consists of two rough-ribbed paleæ, the lower and outer of which is the broader, and tipped with a short bristle. In its uncultivated state this is a coarse hard grass; nevertheless, it is readily eaten by cattle, horses, and sheep: it strikes its roots to a considerable depth in the soil, and on this account is capable of enduring the drought of dry sandy exposed land. Hence, in such situations, where scarcely any other pasture can be procured, as in the naked brecks (or undulating downs) of Norfolk, it is of great value.

Mr. Sinclair assures us that Cocksfoot forms a part of the herbage of pastures most celebrated for fattening and keeping the largest quantity of stock in Devonshire, Lincolnshire, and the vale of Aylesbury; and he states that in the most skilfully managed of these pastures the foliage of the Cocksfoot was only to be distinguished by an experienced eye from the various species of fine pasture grasses with which it is combined. We would not however recommend any one laying down artificial grass to employ Cocksfoot, where other grasses can be made to succeed; for we have invariably found it overgrowing the sorts with which it was mixed, and forming coarse tufts, which neither feeding nor mowing have been able to keep down.



[Dactylis glomerata.]

1, a spikelet much magnified; *a*, *a*, the glumes; 2, a floret with the paleæ.

DACTYLO'CERUS. [PHROSINE.]

DACTYLO'LOGY. The simple art of communicating ideas by spelling words with the fingers is called dactylology. The positions which the fingers are made to assume correspond to the alphabetic characters of a language, and the series of alphabetic signs is perhaps better known under the name of the manual alphabet. The chief, and the most useful application of dactylology is in the instruction of the deaf and dumb. In the various institutions for this class of persons, dactylology is almost universally employed. The letters may be formed by the two hands, or with only one hand: a two-handed alphabet is used in the English institutions; on the continent of Europe, and in America, the one-handed alphabet is employed. Both these alphabets are represented in vol. ii., p. 500, of the 'Penny Magazine.' By reference to these engravings, it will be seen that either of them may be learned by an hour's practice; they are often taught to the deaf and dumb, in conjunction with the written alphabet, in a few days.

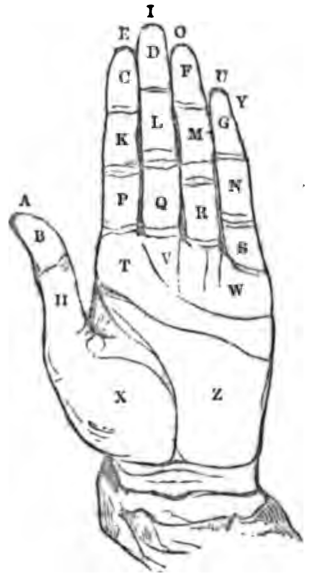
Dactylology must not be confounded with the natural language of the deaf and dumb, which is purely a language of mimic signs. We mention this because some persons have misunderstood the office and overrated the value of finger-talking; imagining that all deaf and dumb persons naturally understand language, and converse with their fingers, and that, by acquiring the manual alphabet, they can communicate with them. Such persons should bear in mind that the deaf are shut out from all spoken languages; that before they can use or understand a written or spoken language, they must learn it; and that such an acquirement is made, under their disadvantages, by a very slow process. To the uninstructed deaf, dactylology is useful as a means of communication between them and their teacher; at first, in such select language as the pupil understands, or as may be readily explained by mimic signs or other auxiliaries. As the pupil advances in the knowledge of words and their collocations, this mode of communication becomes more satisfactory, and at length he can use it to converse on all ordinary subjects with the accuracy of writing and with much greater rapidity.

Degérando has clearly and fully explained the use and value of this very simple art. (*De l'Education des Sourds-Muets*, Paris, 1827.) He says dactylology is to alphabe[illegible] writing what that is to speech. Formed upon writing as its model, it represents it precisely as writing represents words. But in this connexion between dactylology and writing, the reciprocal utility of the two orders of proceeding is at the same time the reverse of what we have remarked in the connexion between writing and speech. In fact, the office of dactylology consists in giving to writing that moveableness which speech enjoys, and which the first loses in the fixedness of depicted characters. Dactylology is writing set free from its material dress, and from those conditions necessary for the employment of the pen or pencil; it carries with itself these instruments; it is thus ready in all familiar conversations; it affords help at all times and in all places. It is thus that dactylology is little more than a [illegible] for those who already possess, in speech, a means of communication more easy and more appropriate to all circumstances. It is thus also that it becomes an essential resource to those who are deprived of speech, to whom it renders [illegible] portion of those advantages, supplying for them writing and giving it in some manner a new extension. However dactylology is far from affording all the advantages of speech, while it loses a portion of those which are peculiar to the privilege of writing. On the one hand it is much less rapid than speech; it is unfurnished with that expression which belongs to the human voice—of that infinite diversity which the soul finds within for pourtraying all the sentiments which affect it; it has nothing of that harmony, that secret charm, that power of imitation of which speech is so capable; its employment, besides, obliges the suspension of all business and all action. On the other hand, [illegible] has none of that durability which renders writing so favourable to the operations of reflection; it is not able to exhibit its signs but after a successive manner; it cannot pres[illegible] in composing, as writing does, those vast pictures which the inventive faculty embraces simultaneously, and subsequently surveys, in every sense, with perfect liberty. Dactylology shares in some of the inconveniences of speech and in some of those of writing; it is as fugitive as the first; it is as complicated in its forms as the second. (Vol. i., pp. 259, 60.)

The manual alphabet has been employed as a medium [illegible] ourse between the deaf and dumb, and blind persons; so commonly used by the former when they have to se in the dark. As the art addresses itself to the of touch, as well as to that of sight, it is easy to touch r person's hands, who is acquainted with the hand-et, in such parts or positions as to enable him to read rds or sentences thus conveyed. Bulwer, one of the t writers on the instruction of the deaf (vol. vi., p. 19), lly aware of the advantage of manual alphabets in nstruction; and it seems strange that he did not one, or ascertain and make known the merits of one, ch he thus writes:—

regnant example, of the officious nature of the touch, plying the defect or temporall incapacity of other we have in one Master Babington, of Burntwood, in nty of Essex, an ingenious gentleman, who, through icknesse, becoming deaf, doth, notwithstanding, feele and, as if he had an eye in his finger, sees signes in rk; whose wife discourseth very perfectly with him range way of arthrologie, or alphabet contrived on nts of his fingers; who, taking him by the hand in ght, can so discourse with him very exactly; for he the joynts which she toucheth for letters, by them ed into words, very readily conceives what she would t to him.' (*Chirologia, or the Natural Language Hand*, p. 106.)

aps the first manual alphabet which was published gland was that of Dalgarno, the most intelligent on the subject of the instruction of the deaf and next to Bulwer; he published it in 1680. As few of his work are now to be met with, we shall give d-alphabet, and accompany it by as much of his own ation as seems necessary for understanding his views ylology. 'After much search and many changes, I t last fixt upon a finger or hand-alphabet according nind; for I think it cannot be considerably mended, by myself or any other (without making tinker's for the purposes for which I have intended it; that istinct placing of and easy pointing to the single ; with the like distinct and easy abbreviation of and triple consonants.'

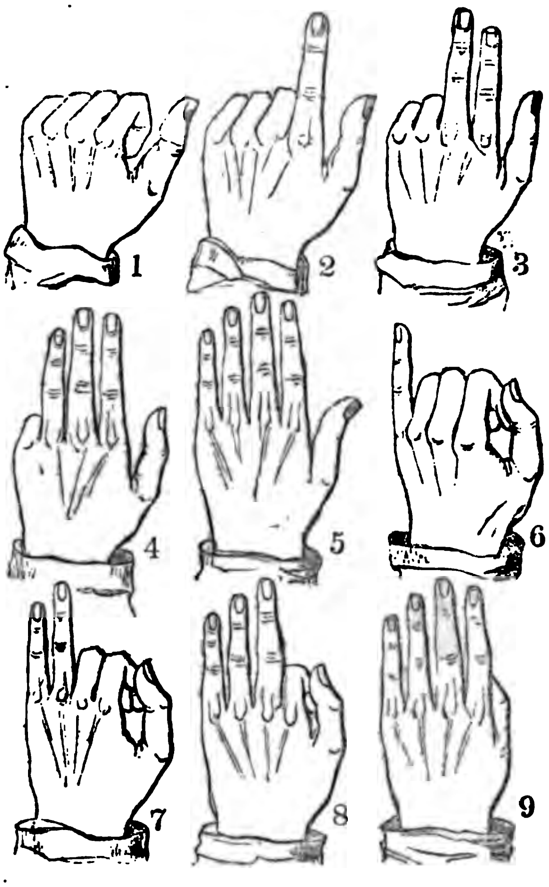


e scheme (I think) is so distinct and plain in itself, needs not much explication, at least for the single , which are as distinct by their places as the middle o extremes of a right line can make them. The f practice are two. 1. *Touch the places of the vowels cross touch with any finger of the right hand. nt to the consonants with the thumb of the right* This is all that I think to be needful for explaining heme, so far as concerns the single letters.'

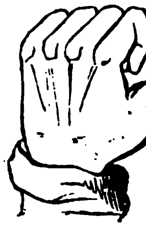
was probably the finger-alphabet from which our t two-handed one was derived; some similarities may ed in them, particularly in the places for the vowels. ne-handed alphabet was invented in Spain, and ap-to have been first published in Bonet's work. [BONET.]

A dactylology of syllables has been sometimes employed in the instruction of the deaf and dumb. This was one of the means adopted by Pereire, who lived in the middle of the eighteenth century, and who was more successful in imparting a knowledge of language to his pupils than any teacher who has since cultivated this difficult art. But his modes of teaching were a mystery which he always refused to divulge, and they were lost at his death. In our own days, M. Recoing has employed syllabic dactylology in conjunction with stenography, and by these means, combined with others more commonly pursued, he conducted the instruction of his own deaf and dumb son with that success which enabled him to convey to his son the words of a speaker as rapidly as they were uttered. M. Recoing published two works on this subject at Paris, in the years 1823 and 1829. A system of alphabetic and syllabic dactylology was also published by Dr. Deleau, the younger, in 1830.

There remains to be noticed another application of finger-language, which, in the instruction of the deaf and dumb, is next in importance to alphabetic signs; it is in the designation of numbers, and in the employment of the fingers in the first rules of arithmetic. The ten fingers are the most ready and natural abacus, as they are doubtless the most antient. That they should early come into use for exhibiting numbers, especially where speech was wanting, may be readily supposed. The only system of manual notation which deserves that name is the one which we shall now describe. It is used in several of the American and English institutions for the deaf and dumb; we consider it perfect, and we believe it has never before appeared in any English publication. Mr. David Seixas, of Philadelphia, improved the Abbé Sicard's signs for numbers, and his plan was used in the institution for the deaf and dumb in that city. The following system was invented by Mr. O. Stansbury, a former superintendent of the New York Institution; it has received a few, perhaps unimportant, modifications, and by it any amount of numbers may be expressed. One hand only, the left, is used, and the pupil's right hand is thus left at liberty to record his calculations upon his slate. The nine digits are represented one after another by elevating the fingers of the hand successively, thus:—



The cipher is represented by the closed hand.



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The thumb represents *one*, the other fingers being closed, the index-finger is added for *two*, the middle-finger is raised for *three*, the ring-finger is added for *four*, and the open hand represents *five;* the little finger alone is raised for *six*, the ring-finger is added for *seven*, the middle-finger for *eight*, and the fore-finger is raised to the others for *nine*. Thus far for units. To indicate tens, the position of the hand is changed from perpendicular to horizontal; the thumb is pointed forwards for ten, the thumb and fore-finger for twenty, and so on to ninety. Hundreds are pointed downwards; thus the thumb, fore-finger, and middle-finger pointed downwards represent 300. If 572 be the number to be designated, three positions of the hand are required; the five fingers are pointed downwards for 500, the little-finger and ring-finger are pointed forwards for 70, and the thumb and fore-finger are held upright for two. During these changes the hand is kept in front of the body. To represent thousands, the left hand is placed across the body towards the right shoulder, and the signs which were used in front for units, in this situation, represent thousands; keeping the hand in the same situation and pointing forwards or downwards, tens of thousands or hundreds of thousands are exhibited. By changing the situation of the hand to the left shoulder, and by exhibiting the various positions of the fingers before described, millions, tens of millions, and hundreds of millions are expressed. The same positions, upright, forwards, and downwards, exhibited in other situations, may be applied to the expression of notations to any extent. Though rather complex in description, the whole is most easy and comprehensive in operation. The superiority of this system of manual notation for teaching arithmetic to the deaf and dumb, or for making signals of numbers where silence is necessary, compared with the clumsy resources of figuring the digits in the air, of repetitions of tens by the ten fingers, or even of arbitrary signs, will be at once acknowledged.

DACTYLO'PORA. [POLYPARIA MEMBRANACEA.]

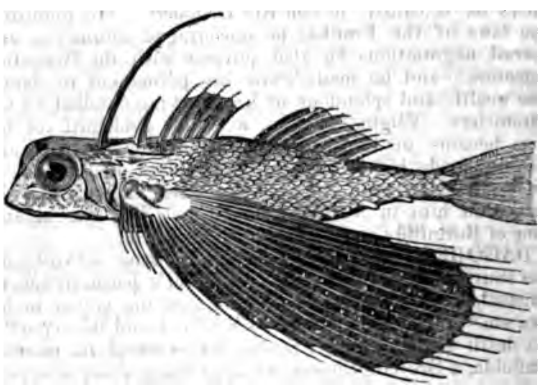
DACTYLO'PTERUS (Lacépède), a genus of fishes of the order Acanthopterygii and family Loricati. Generic characters:—head flattened, large and long, and rising suddenly from the muzzle, which is very short; inferior angle of the pre-operculum furnished with an elongated strong spine; operculum without spines; mouth small; jaws furnished with masses of minute conical teeth; branchiostegous rays six in number; some of the anterior rays of the dorsal fin free; subpectoral rays numerous, very long, and connected by a membrane; ventral fins with four rays; body covered with hard carinated scales.

The fishes of this genus are classed with the gurnards; they may however be readily distinguished from the typical or true gurnards* by the immense size of the pectoral fins.

In the true gurnards we observe three detached rays situated under the pectoral fins, but springing from the same base: in our present genus these rays are very numerous, immensely long, and connected by a membrane. By means of these large fins, the length of which is almost equal to that of the body of the animal, these fishes are enabled to sustain themselves in the air for several seconds, which they often do to escape from their enemies when pursued; but in quitting the waters to avoid their pursuers in that element, they not unfrequently fall a prey to the frigate-birds and albatrosses.

This genus contains but two species, one of which has been long known: it inhabits the Mediterranean, and is the Trigla volitans of Linnæus, commonly called the flying-gurnard and flying-fish.† The other species inhabits the Indian Seas, and is the Dactylopterus orientalis of Cuvier.

The flying-gurnard (*Dactylopterus volitans*) varies from one foot to fifteen inches in length, and is of a brown colour above, with spots of a deeper tint: the sides of the body are red, and the under parts are of a pale rose-colour. The large pectoral fins are of a blackish tint, mottled and spotted with blue; the ventral and anal fins are of a rose-colour; the anterior dorsal is gray, with clouded markings of a deeper hue; the posterior dorsal is transparent, and its rays are of a pale colour, spotted with brown.



[Dactylopterus orientalis.]

DADO, a term for the die or plane face of a pedestal. The dado employed in the interiors of buildings is a continuous pedestal, with a plinth and base moulding and a cornice or dado moulding surmounting the die. This continuous pedestal, with its moulding, is constructed of wood, and is usually about the height of a chair-back. Its present use is to protect the stucco-work or paper of the walls, but originally it was used as an architectural decoration to a room. The construction requires care in joining the deals of the dado, which are ploughed and tongued and keyed transversely at their backs, in order to prevent any joint from appearing in the die or plane surface. Some dados are pannelled.

DÆDA'LION. [FALCONIDÆ.]

DAFFODIL, the English name of Narcissus Pseudo-Narcissus and its allies, to which some recent botanists have given the generic name of Ajax.

DAGHESTAN, a country situated on the western shores of the Caspian Sea, extending from the mouth of the river Terek, 43° 50′ N. lat., to the peninsula of Absheran on the south, 40° 30′ N. lat. Though forming a part of the Russian government of Georgia, the different tribes which inhabit the valleys on the eastern declivities of Mount Caucasus are governed by independent petty sovereigns, but those which possess the low and hilly country towards the sea are dependent on the Russian governor. The term Daghestan means the mountainous country, from the Turkish word Dagh, a mountain. [GEORGIA and DERBEND.]

DAGHO, DAGOE, or DAGEN, an island at the entrance of the gulf of Finland, about 41 miles long, and varying from 27 to 37 miles in breadth; in 58° 4′ to 59° N. lat., and from 22° 20′ to 23° 8′ E. long. It is comprehended in the Russian province of Reval, circle of Habsel, and is divided by a small channel from the island of Oesel. Its area is about 304 square miles: it contains three parishes. The inhabitants, about 10,000 in number, are Esthonians; they are employed in husbandry, grazing, fisheries, and carry on a little trade in the port of Tewenhaven, which lies on the eastern side of the island. The coasts abounding in shallows and sandbanks, a lighthouse has been erected near the village of Dagerort, in 58° 50′ N. lat., and 22° 40′ E. long. The Swedes, to whom the Danes ceded Dagho in 1645, ceded it in their turn to Russia under the treaty of Nystadt, in 1791.

DAGOBE'RT I., son of Clotarius II., succeeded him in 628 in the Frankish monarchy. He gave his brother Caribert a part of Aquitania, with the city of Toulouse, but Caribert dying in 630, Dagobert reunited the whole monarchy under his sceptre, and caused Chilperic, Caribert's eldest son, to be put to death. Boggis, another son of Caribert, was the head of the line of the dukes of Aquitaine, and of the counts of Armagnac. Dagobert sustained wars against the Saxons from England, the Vascones of the Pyrenees, the Sclavonians, and the Bretons, and he obliged Judicaël, the prince of Britanny, to give him satisfaction for the incursions which he had made into his territories. When the Bulgarians were flying from before the Huns, they took refuge in Austrasia, where Dagobert granted them an asylum; but soon after, fearing that these guests might become too powerful for him, he gave orders to have them all massacred in one night, when 10,000 families were put to the sword. Dagobert was cruel and debauched, like all the rest of the Merovingian kings; and yet in the old ballads and chronicles he is called 'le bon Roi Dagobert.' He published the laws of the Franks; he encouraged commerce, and opened negotiations for that purpose with the Byzantine emperors; and he made Paris his permanent residence. The wealth and splendour of his court are extolled by the chroniclers. Eligius, or Eloi, a skilful goldsmith of the time, became his treasurer and confidential minister, and was also made bishop of Noyon. Dagobert died in 638, in his thirty-sixth year, and left two sons, Siegbert II., who succeeded him in Austrasia, and Clovis II., who became king of Burgundy and Neustria.

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* Those belonging to the genus Trigla as now restricted by Cuvier and others.

† There are other flying-fishes with which our present species must not be confounded. The common flying-fish belongs to the genus Exocetus.

DAGOBERT II., son of Siegbert II., king of Austrasia, was shut up in a convent after his father's death, in 656, by Grimoald, maire of the palace, who gave the crown to his own son. Dagobert was sent to Scotland, and the report of his death was spread in France. In Scotland he married Mathilda, a Scotch princess, and after many years returned, and was acknowledged king of Austrasia. He was murdered in 679 by Ebroïn, maire of the palace of Thierri III., king of Burgundy and Neustria. Pepin d'Heristel succeeded Dagobert in Austrasia, not as king, but with the title of duke.

DAGOBERT III. succeeded his father Childebert III. as king of the Franks in 711. Pepin d'Heristel continued to enjoy the whole authority, as he had done under the preceding reigns, owing to which circumstance the nominal kings have been styled in history Rois Fainéans. Pepin died in 714, and Rainfroy succeeded as maire of the palace. In 715 Dagobert died, leaving a child called Thierri, who was afterwards called Thierri IV., and was set up as a nominal king by Charles Martel, the natural son of Pepin d'Heristel. (Henschenius, *Historical Dissertation on the three Dagoberts*, 4to., 1653.)

DA'GYSA. [SALPA.]

DA'HLIA, a small genus of Composite flowers, of which three species only are known, all natives of Mexico. Of these, two, D. coccinea and D. Cervantesii, were formerly cultivated in this country, but not sporting into varieties, and being much less beautiful than D. variabilis, they are not now seen in gardens. D. variabilis itself is, in its wild state, a bushy herbaceous plant, seven or eight feet high, with single purple or lilac flowers, and is by no means remarkable for its beauty. In cultivation however it is so readily improved in size and form, and sports into such endless varieties in stature, leaves, and flowers, that it has become the most extensively cultivated florist's plant of the present day. Its innumerable sorts are the glory of our gardens in the autumn, and are quite unrivalled at that season of the year: they are however destroyed by the earliest frosts. Each season produces its favourite varieties, and these are in their turn eclipsed by others of a newer or a choicer form. For those which are the most in vogue at the present day the nurserymen's lists should be consulted; their fleeting reputation renders them undeserving of notice in a permanent work.

As some attempts have been made of late years to substitute the name of Georgina for that of Dahlia, we may take this opportunity of stating that the name Dahlia originated with the Spanish botanist Cavanilles in 1791; that the name was applied by Thunberg to a different genus in 1792, without however superseding the former; that the name Georgina was not heard of till 1803, and that consequently, as priority of publication settles all such matters, there is no pretence for abolishing Dahlia and substituting Georgina.

DAHOMY, a celebrated and for some time powerful negro kingdom of western Africa, lying inland from the part of the coast of Guinea called the Slave Coast. It is bounded on the west by Ashantee, from which it is divided by the river Volta. Its southern boundary is about sixty or seventy miles from the sea, and it is supposed to extend about 150 or 200 miles farther into the interior, which would bring it near the range of the Kong Mountains. Its capital, Abomey, is placed in lat. 7° 59′ N., and in about long. 3° 20′ E.

Even the name of Dahomy may almost be said to have been unknown in Europe till some time after the beginning of the last century. Dauma, which is no doubt the same kingdom, is indeed mentioned by Leo Africanus, along with several others, of which he merely says that they lie south of Nigritia; and that name is found placed where Dahomy lies in several maps published towards the end of the sixteenth century, the earliest being probably one in the Geography of Sanutus, published at Venice in 1588. It occurs so placed even in the Maps of Sir Jonas Moore's Mathematics, published under the care of Dr. Halley in 1681; but in another map published by Halley in 1700 it is omitted, and it does not again appear for a considerable time. The most recent accounts indeed now represented the whole of that part of Africa as occupied by other states. Bosman, who has minutely described this part of the African coast from personal observation, in a series of letters written in 1700 and 1701, makes no mention of Dahomy. The Dahomans for the first time made their appearance on the coast where the European establishments were in the reign of their king Trudo Andati, or, as other accounts call him, Guadja Trudo, who is said to have succeeded to the throne in 1708. This prince, who appears to have been a person of remarkable talent, as well as of inordinate ambition and warlike ferocity, having determined upon securing to himself a share of the European commerce, in forcing his way to the coast captured in 1724 the chief town of the kingdom of Ardra, the most powerful state that lay between him and the sea. Here he found a Mr. Bulstrode Lamb, who resided in the place as factor for the English African Company. Lamb was detained in captivity for nearly three years; but was treated with extraordinary kindness and consideration by the black monarch, who till now had never set his eye upon either a white man or the sea. We believe the earliest account of Dahomy that exists is a very curious letter written by Lamb, after he had been for some months in captivity, to his superior, Mr. Tucker, governor of the English fort at Whidah (the Juida of the French, and Fida of the Dutch). It is dated from Abomey, in November, 1724; but did not appear in print till it was published at the end of a 'New Voyage to Guinea,' by William Smith, Esq., which appeared at London in 1745. Smith had been on the Slave Coast in the beginning of March, 1727, when he found that only a few days before his arrival the king of Dahomy had effected the conquest of the state of Whidah, lying along the coast, and had laid in ruins the English, French, and Portuguese forts situated at its capital, Sabi, or, as the French call it, Xavier. The captains of these forts and all the European residents were now prisoners in the Dahoman camp. However, they were all soon after released, as Lamb had been a short time before. We have the continuation of the narrative in the 'Full Account of some part of Guinea,' published at London, in 1734, by Captain William Suelgrave, who arrived at this part of the African coast only a few weeks after Smith, and while the king of Dahomy and his troops still occupied the territory. The narrative of Snelgrave, who visited the Dahoman camp, is exceedingly curious. In 1729 he made a second voyage to the same coast. In the interval the king of Dahomy and the governors of the French and English forts had again come into collision; and just before Snelgrave's arrival, Mr. Testefole, the English governor, who had imprudently endeavoured to excite the people of Whidah to an insurrection against their Dahoman masters, had been seized by the latter and put to death. Snelgrave has, from the information of others, brought down his account to the end of March, 1732, at which time a new quarrel had ended in the destruction of the Dutch, English, French, and Portuguese forts at the town of Jaquin, the only other part of the Slave Coast where there were any European establishments. The residents, however, although taken prisoners in the first instance, were all eventually allowed to take their departure. It is asserted, nevertheless, that Guadja Trudo in his advanced years became more blood-thirsty than ever, and that a morbid suspiciousness by degrees took possession of him, and destroyed the better qualities of his former character. He died this same year, and was succeeded by his son, Bossa Ahadee. A work entitled 'Memoirs of the Reign of Bossa Ahadee, with an Account of a Journey to Abomey in 1772,' was published in 1789, by Mr. Robert Norris of

Liverpool, a person who had been engaged for eighteen years in the African trade. It is accompanied by a map of the kingdom of Dahomy, and is reprinted, with many corrections and additions by the author, in 'The History of Dahomy, compiled from authentic memoirs, by Archibald Dalzel, Esq., governor of Cape Coast Castle,' 4to., London, 1793. This last-mentioned work brings down the history of Dahomy, through the reigns of Ahadee, a destestable tyrant, the scourge of his own subjects and the torment of all his neighbours, for forty years; of his son, Adahoonzou II., by whom he was succeeded in 1774, and who continued his oppression and his ferocious wars; and of the first years of that of Adahoonzou's son and successor Wheenoohew, who mounted the throne in 1789. The materials for the two last reigns were contributed by Lionel Abson, Esq., the British governor at Whidah, who had then been twenty-seven years in the country. The continuation of the history of Dahomy for some years further is given in a little work entitled 'A Voyage to Africa, with some account of the Manners and Customs of the Dahomian People,' by John M'Leod, M.D., 12mo., London, 1820. Mr. M'Leod visited this part of Africa in 1803. At that time Dahomy still seems to have been a powerful state, and to have exercised sovereignty over all that part of the coast of Guinea. The reigning king was a younger son of Wheenoohew, the elder having been set aside because one of his toes overlapped another. It appears, however, from the accounts of Clapperton and the Landers, that Dahomy has now been reduced to subjection by the neighbouring state of Yarriba; and it is probable that Yarriba in its turn very soon will be, if it has not already been, absorbed by the extending empire of the Fellatahs.

The region in which the kingdom of Dahomy is situated is a vast plain rising by a very gentle ascent from the sea. No river worth notice falls into the sea between the Volta and the Brass river, or Niger. The soil is a rich reddish clay, on which scarcely a stone is to be found of the bigness of a walnut. All who have visited the coast, especially before the devastations of the Dahomans, describe it as a scene of matchless beauty and luxuriance. An ample account of its vegetable productions, comprising maize and other farinaceous crops; yams, potatoes, pine-apples, melons, oranges, limes, guavas, and other tropical fruits; a singular fruit said to possess the property of communicating a sweet taste to the strongest acids and bitters; indigo, cotton, sugar, tobacco, palm oil, spices, &c., may be found in the introduction to Mr. Dalzel's book, to which may be added some notices in Mr. M'Leod's volume. The country abounds with tigers, leopards, hyænas, elephants, buffaloes, deer, sheep, goats, hogs, both wild and tame, and several varieties of poultry. It is also infested by boa snakes of immense size, and other kinds of serpents. The government of Dahomy is, or at least formerly was, as absolute a despotism as has anywhere existed; and authority is maintained by the shedding of blood at a rate which has been approached nowhere but in Africa. The customs or festivities held at the court of the monarch on occasion of the annual receipt of duties or tribute, are of the same ferociously sanguinary character with those that take place at Ashantee. Their regular season appears to be in April or May, but instances are mentioned of their lasting for three months, and in these cases they seem to begin earlier in the year. The chief ornament of the royal residence is human skulls, of which, when a number was wanted to pave a court or decorate a ceiling, it was not an unusual process to have some scores of persons massacred for the purpose. The principal trade formerly carried on with Dahomy and the subject states on the coast was in slaves; and since the abandonment of that trade on the part of the principal European powers, which used to resort to this part of Africa, the commercial intercourse which these kingdoms hold with other parts of the world has become quite insignificant. The only money of the Dahomans consists of cowry shells, of which a thousand are stated to represent half-a-crown English. Their language is the same with that of the people of Whidah and the other nations of the coast.

DAILLE', JEAN, was born at Chatelleraut in 1594, of a Protestant family. In 1612 he undertook the education of the two grandsons of Duplessis Mornay, the friend of Henry IV., and he travelled with them in several countries of Europe. At Venice he became acquainted with the famous Fra Paolo Sarpi. On his return to France he became pastor at Charenton in 1626. He published many works on divinity, both in Latin and French, and especially on controversial subjects. He was one of the most learned and most powerful advocates of the Protestant doctrines in his time. His principal productions are:—1, 'Traité de l'emploi des S. S. Pères pour le jugement des différends de la religion,' Geneva, 1632, which was also published in Latin, with the title 'De usu Patrum:' it is one of Daillé's best works, and much esteemed, especially by the Presbyterians; 2, 'De la croyance des Pères sur le fait des images; 3, 'Adversus Latinorum traditionem de religiosi cultus objecto;' 4, 'De cultibus religiosis Latinorum.' These three last works attempt to prove, that in the early or primitive Christian church there was no religious worship paid to the host, nor to relics, cross, images, &c. 5, 'De confirmatione et extrema unctione;' 6, 'De sacramentali sive auriculari Latinorum Confessione,' Geneva, 1661. This last work puts forth the strongest arguments against the practice of auricular or private confession. [CONFESSION.] 7, 'De scriptis quæ sub Dionysii Areopagitæ et Sancti Ignatii Antiocheni nominibus circumferuntur,' Geneva, 1666. Daillé looks upon tho works attributed to Dionysius and Ignatius, of Antioch, as apocryphal. This, which is a work of much historical and critical learning, is dedicated to Samuel Bochart. 8, 'De pœnis et satisfactionibus humanis.' He also wrote an apology of the reformed churches and numerous sermons, which have been collected in several volumes, and also 'Dernières heures de Duplessis Mornay,' Leyden, 1647. Daillé died at Paris in 1670. His son, Adrien Daillé, left France at the revocation of the Edict de Nantes, and retired to Zürich, where he wrote his father's life.

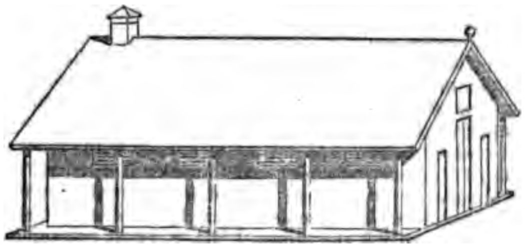
DAIRY, the name usually given to the place where the milk of cows is kept and converted into butter or cheese. The occupation is called *dairying;* and land which is chiefly appropriated to feed cows for this purpose is called a *dairy-farm.*

A dairy-house should be situated on a dry spot somewhat elevated, on the side of a gentle declivity, and on a porous soil. It should be on the west or north-west side of a hill if possible, or at least sheltered from the north, east, and south, by high trees. In some countries where there are natural caverns with an opening to the west, and springs of water at hand, the best and coolest dairies are thus prepared by nature. Artificial excavations in the sides of freestone rocks are sometimes formed for the purpose of keeping milk, and more frequently wine. Where no such natural advantages exist, the requisite coolness in summer, and equal temperature in winter, which are essential in a good dairy, may be obtained by sinking the floor of the dairy some feet under ground, and forming an arched roof of stone or brick. In cold climates flues around the dairy are a great advantage in winter; and an ice-house in warm summers is equally useful. But these are only adapted to those dairies which are kept more as a luxury than as an object of profit. In mountainous countries, such as Switzerland, where the summers are hot in the valleys and the tops of the mountains or high valleys between them are covered with fine pastures, the whole establishment of the dairy is removed to a higher and cooler atmosphere, where the best butter and cheese are made. Coolness is also produced by the evaporation of water, an abundant supply of which is essential to every dairy. It is also a great advantage if a pure stream can be made to pass through the dairy, with a current of air to carry off any effluvia, and keep the air continually renewed.

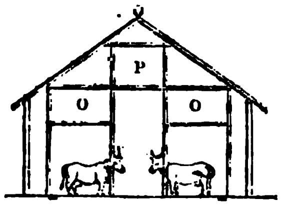
As the milk suffers more or less from being agitated, or too much cooled, before it is set for the cream to rise, the cow-house or milking-place should be as near as possible to the dairy, or rather it should be under the same roof. The milk may then be brought immediately from the cows without being exposed to the outer air. The dairy-house should consist of three distinct apartments below, with lofts and cheese-chambers above. The principal place is the dairy, properly so called, sunk two or three feet below the level of the ground, with a stone or brick bench or table round three sides of it to hold the milk pans. This table should be a little below the level of the outer soil. Air-holes covered with wire should be made in the walls a little above, and on opposite sides of the dairy; and they should have shutters sliding over them to open or shut according to the weather. The floor should be of stone or paving tiles, sloping gently towards a drain to carry off the water. Great care should be taken that no water stagnates s drain, which must be kept as clean as the floor of airy, and not communicate with any sink, but run out he open air: a declivity from the dairy is essential for urpose. If this cannot be obtained, it must run into en tank, and the water be regularly pumped out. windows of the dairy should be latticed. Glazed ws may be added for the winter, but they should al- be open except in very hot or very cold weather. There e shutters to close entirely, but this is not essential. windows are made like venetian blinds, the light will luded without excluding the air. The utmost purity be maintained in the air of a dairy; nothing should it that can produce the slightest smell. No cheese or t should be kept in it; and particularly no meat, d or undressed. Even the dairy-maid should avoid aing longer in it than is necessary, and should at all be extremely clean in her person.

: next important place is a kind of wash-house, in there is a chimney where a large copper kettle hangs rane to heat water in, or milk when cheese is made. intries where wood is scarce, and pit-coal is the com- uel, a copper may be set in brick-work with a grate it, as is usual in England. In this place all the ls of the dairy are kept, and scalded with boiling every day. It should have an outer door, which may the south, and benches outside on which the pails her utensils may be set to dry and be exposed to the air. en the two last apartments may be another commu- ig with both, and forming a kind of vestibule, where urning may take place; and over them a cheese-room fts, or any other useful chambers. A verandah round iry is very convenient, or on three sides at least. It from the sun, and adds to the warmth in winter; e utensils may be dried and aired under it even in weather. Gentlemen's dairies are often built expen- and highly ornamented; but they seldom unite all nveniences essential to a good dairy, because the ar- s who plan them are seldom practical farmers. They nerally too far from the cow-houses, which might be to them without detracting from the neatness of the ire. A dairy-house placed near a mansion, and at a e from the farm buildings, is quite out of its place. itzerland and in Holland, the cow-house and dairy have a very neat appearance within a short distance he principal residence. The plan in both countries similar; the style of the roof is the chief difference. ken from the common dairy-farms in Holland, where rmer and his family live under the same roof with rs. In the Netherlands, especially in North Holland riesland, a cow-house is as clean as any dwelling- and the family often assemble and take their meals

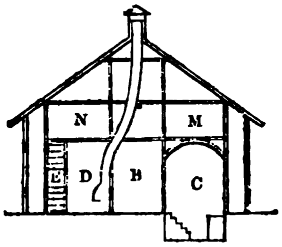
The following description of a cow-house and under one roof combines all that is useful, with erable neatness internally and externally:—It is ling about sixty feet long by thirty wide, with a ah running round three sides of it. The dwelling is re attached, as it usually is in common dairies, and the ig is not surrounded by a farm-yard: these are the rcumstances in which it differs from that of a com- easant. The dairy-room is sunk below the level of l, and is paved with brick. The sides are covered utch tiles, and the arched roof with hard cement. w-house, like all in Holland, has a broad passage in iddle, and the cows stand with their heads towards ssage, which is paved with clinkers or bricks set on Their tails are towards the wall, along which runs a gutter sunk six or eight inches below the level of the n which the cows stand. This gutter slopes towards covered with an iron grate, which communicates by d arched drain with a vaulted tank into which all the flows. The gutter is washed clean twice a day before rs are milked. The cows stand or lie on a sloping floor, and have but a small quantity of litter allowed which is removed every day and carried to the dung- r to the pig-styes to be more fully converted into Whenever the litter is removed, the bricks are swept and in summer they are washed with water. In id the cows' tails are kept up by a cord tied to the them, which passes over a pulley with a weight at her end, as we see practised with horses that have icked: thus they cannot hit themselves, or the person ilks them. The manner in which the cows are fast- s worthy of notice:—Two slight pillars of strong wood are placed perpendicularly about two feet distance from each other, so that the cow can readily pass her head between them. On each of these is an iron ring, which runs freely up and down, and has a hook in its circumference: two small chains pass from these hooks to a leather strap, which buckles round the neck of the cow. Thus the cow can rise, and lie down, and move forward to take her food, which is placed in a low manger before the two pillars; but she cannot strike her neighbour with her horns. The mangers or troughs are of wood, or of bricks cemented together, and are kept as clean as all the rest of the cow-house. In



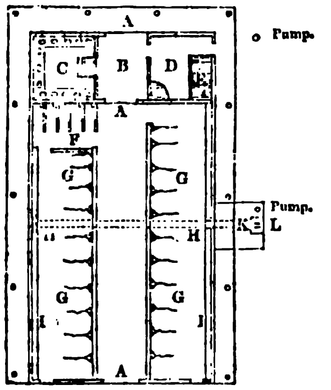
Side view.



Section of the Cow-house.



Section of the Dairy.



Ground Plan.

A, A, A, passage through the cow-house and dairy ten feet wide, paved with bricks set on edge or Dutch clinkers. The food is brought in this passage in a small cart and distributed to the cows.

B, part of the above passage closed in with doors and forming a vestibule to the dairy; C, dairy-room, in which only milk, cream, and butter, are kept. It is sunk three feet under the level of the cow-house, and covered with a brick arch; it has one latticed window, and several ventilators, on a level with the place on which the milk vessels are set.

D, the room where the utensils are scalded, and where cheese is made; in one corner is a fireplace, with a large kettle or a copper set.

E, a stairs to go up to the cheese-room M, and loft N.

F, calf-pens, in which the calves are tied up to fatten, so that they cannot turn to lick themselves; a small trough with pounded chalk and salt in each pen.

G, the place for the cows, without partitions; each cow is tied to two posts by two small chains and two iron rings, which run on the posts. The chains are fastened to a broad leather strap, which is buckled round the neck o each cow. H, H, two sinks, with iron gratings over them, to catch the urine from the gutters I, I, which run all the length of the cow-house on each side. K, the urine tank, vaulted over with a door, L, to clean it out, and a pump to pump up the liquid manure. O, O, in the section, are places where the green food or roots are deposited for the day's consumption. P, a hay-loft.

Switzerland the cow-houses are similar, but there is also a rack, the back of which towards the passage shuts up with a board on hinges. The Dutch mode supplies more light and air to the middle passage; and as the food is given frequently and in small quantities there is very little waste. The preceding cuts will give a tolerable idea of the whole arrangement. The food is brought in carts, which are driven at once between the cows. What is not wanted immediately is stored above, whence it is readily thrown down before the cows. Thus much trouble is saved, and one man can feed and attend to a great many cows. From November till May the cows never leave the cow-house. In summer when they are out, if they are in adjacent pastures, they are driven home to be milked, but if the pastures are far off, which is sometimes the case, they are milked there, and the milk is brought home in boats; but this is not thought so good for the butter, which is then always churned from the whole milk, without letting the cream rise. The finest and best flavoured butter is always made from the cream as fresh as possible; and to make it rise well, the milk should be set as soon as it is milked, and agitated as little as possible. The greatest quantity is seldom obtained when the quality is the finest. When great attention is paid to the quality, the milk is skimmed about six hours after it is set; and the cream taken off is churned by itself. The next skimming makes inferior butter. These particulars are mentioned to show the necessity there is of having the dairy as near as possible to the cow-house.

The utensils of the dairy, such as pails, churns, vats, &c., are usually made of white wood, and are easily kept clean by scalding and scouring. Leaden troughs are used in large dairies; and if they are kept very clean by careful scouring, they answer the purpose better than wood. They may be so constructed that the milk may be let off gently before the cream, which is collected by itself. This saves all the trouble of skimming. Brass pans have the advantage of being readily warmed on a chafing dish in winter. In Devonshire tin or brass pans are frequently used instead of earthenware. Although there is some danger in the use of brass utensils, very little attention will obviate it. It only requires that they should be kept bright, in which case the smallest speck of oxide or verdigris would be perceptible. In Holland the milk is invariably carried in brass vessels. Cast-iron pans have been invented, which are tinned inside. They are economical; but there is nothing better or neater than well-glazed white crockery ware, of the common oval form. Some recommend unglazed pans for summer, but they are difficult to keep sweet, as the milk insinuates itself into the pores, and is apt to become sour there.

The most common use of cows is to supply butter and cheese [BUTTER and CHEESE], and sometimes to fatten calves [CALF] for the butcher; but the most profitable dairy is that which supplies large towns with milk. In these dairies the system is different. The cows are mostly kept in stalls, and fed with food brought to them. Some dairymen near London possess several hundred cows, and the arrangement of their establishments is worthy of notice. The cows are bought chiefly in the north, before or after they have calved. They are seldom allowed to go to the bull, but are kept as long as they can be made to give milk by good feeding. When they are dry, they are often already sufficiently fat for sale, or at all events they soon fatten, and are sold to the butcher. A succession of cows is thus kept up, new ones arriving as others are sold off. The women who purchase the milk from the dairyman and carry it about for sale, come for it to the dairy and milk the cows twice a day; and as they well know that the last drop of milk is the richest, the cows are sure to be milked quite dry, an essential thing in a dairy. An accurate account is kept of the quantity which each woman takes, which is paid for weekly. When there is more milk than there is a demand for, it is set, and the cream is sold separately, or made into butter; but this is seldom done to any extent. The cows are fed on every kind of food that can increase the milk: brewers' grains and distillers' wash are preferred, when they can be obtained. The grains are kept in large pits, pressed close and covered with earth, under which circumstances they will remain fresh a long time. Turnips and beet-root are used in large quantities; but hay is given sparingly. The cows are generally placed in pairs, with a partition between every two pair. Each cow is fastened to the corner of the stall, where she has a small trough with water before her: thus they cannot gore each other with their horns. The great dairies about London are kept very clean; but the liquid manure, which would be so valuable for the market-gardens, is lost, and runs off by the sewers. In Belgium the urine would be contracted for at the rate of 2*l.* per cow per annum, which would produce 1200*l.* a year in a dairy of 600 cows, and would pay a good interest for the money expended in constructing large vaulted cisterns under each cow-house.

The dairy farms of England are chiefly in Gloucestershire, Devonshire, and Cheshire. They require a smaller capital than arable farms of the same extent; the chief outlay is the purchase of cows. The rent of good grass land is generally higher than if it were converted to arable land; and the risk from seasons, and from a variation in the price of the produce, is much less in a dairy farm than in one where corn is chiefly cultivated. Hence the rents are better paid, and there are fewer failures among the tenants: but the profits of a dairy farm, without any arable land, are not considerable; a decent livelihood for the farmer and his family is all that can be expected. There is no chance of profit in a dairy of which the farmer or his wife are not the immediate managers. The attention required to minute particulars can only be expected in those whose profit depends upon it. The dairies of men of fortune may be arranged on the best and most convenient plan, and be indispensable articles of luxury; but the produce consumed has always cost much more than it could be purchased for. A proper attention to keeping correct accounts of every expense will convince any one of this truth. In a dairy farm the great difficulty is to feed the cows in winter. It is usually so arranged, that the cows shall be dry at the time when food is most scarce, and they are then kept on inferior hay, or straw, if it can be procured. It is a great improvement in a dairy farm if it has as much arable land attached to it as will employ one plough, especially if the soil be light; but the mode of cultivating this farm must vary from that of other farms, since the food raised for the cows must be a principal object. Corn is a secondary object; and the cultivation of roots and grasses must occupy a great portion of the farm. When the grasses degenerate, a crop or two of corn is taken, and the rotation is chiefly roots, corn, and grass cut for hay, until it wears out. If the roots are well manured, the land keeps in excellent heart. The old pastures are kept for summer feeding. Where there is no arable land near a dairy farm, it deserves mature consideration whether it will be advantageous or not to allow some of the pasture to be ploughed up. It is often a dangerous experiment where the soil is naturally heavy, which is the case with most dairy farms in England. Arable land laid down to grass for the purpose of the dairy seldom produces fine-flavoured butter, or good cheese; but clover-hay is excellent for young stock, or to fatten off the old cows. Lucern is reckoned to make cows give very good milk: nothing however can equal a rich old pasture, as all dairymen agree.

In hiring a dairy farm, it is an object of great importance that the buildings be situated near the centre of the land, and that they be well constructed and convenient. The nature of the feed must be ascertained by experience. It is often impossible to say by mere inspection whether a pasture will make good butter or cheese, especially the latter. But those which have no great reputation may often be highly improved by draining, and also by weeding, a thing too much neglected in pastures.

DAIS or **DEIS**, a word which occurs very frequently in old English authors; as in Chaucer, Prologue to the Canterbury Tales, v. 372.

> Wel semed eche of hem a fayre burgeis,
> To sitten in a gilde halle, on the *deis*.

Tyrwhitt apprehends that it originally signified the wooden floor (Fr. *d'ais*, Lat. *de assibus*) which was laid at the upper end of the hall, as we still see it in college-halls, and in most, if not all, of those of the city companies in London, and those belonging to the inns of court. That part of the room being floored with planks was called the *deis*, the rest being either the bare ground, or, at best, paved with stone; and being raised above the level of the other parts, it was called *the high deis*. In royal halls there were more *deises* than one. Christine of Pisa (Hist. Cha. V., P. iii., c. 33) says that at a dinner which Charles V. of France gave to the emperor Charles IV. in 1377, there were *five deis*.

As the principal table was always placed *upon a deis*, it began, by a natural abuse of words, to be called itself a deis, and people were said to sit *at the deis* instead of *at the table upon the deis*. So in 'Matthew Paris,' *Vit. Ab.*, p. 1070, 'Priore prandente ad magnam mensam, quam *deis* vocamus?'

Menage, whose authority has led later antiquaries to interpret *deis* a canopy, has evidently confounded *deis* with *ders*.

(Ducange, *Glossary*; Tyrwhitt's *Notes on Chaucer's Canterb. Tales*, 4to., Oxford, 1798, vol. ii., p. 403.)

DAISY, or DAY'S EYE, the little perennial plant called Bellis perennis by botanists. Like most composite flowers, it has proved productive of varieties when domesticated; but they have almost disappeared, except from old-fashioned or cottage gardens. And yet the varieties are in some cases very pretty, and well suited for an edging to borders. The double-red, the striped, and the hen-and-chickens are the prettiest sorts. The latter is a curious permanent vegetable monster, and derives its singular name from each of the flower-heads being surrounded by a quantity of smaller heads half covered by the mother-head, as a brood of chickens is by the wings of the hen. This circumstance arises from the leaves or leaflets of the involucre generating buds from their axils, instead of remaining sterile, as such leaves usually are.

DALAGO'A BAY is situated on the eastern coast of Southern Africa, where the twenty-sixth parallel and the thirty-third meridian intersect one another. It is a large bight, extending about twenty miles east and west, from Cape Ingack to the entrance of the English River; twenty-two miles to the southward of this line it affords good anchorage for the largest vessels, and will probably some time be an important place, as there does not exist between it and False Bay, near Cape Town, any port in which a vessel drawing more than eight feet of water can enter, though this line of coast is upwards of 1000 miles in length. Three rivers enter the bay; the Manice or King George's River, the English River, and the Mapoota, and they are all navigable for a considerable distance. The English River is properly an æstuary, into which three other rivers discharge themselves, at the distance of eight miles from the bay. On this æstuary, about two miles from the sea, is built a Portuguese fort, the most southern possessed by that nation in Africa; but it is a miserable place, consisting of three or four houses: its garrison is composed of three officers and about fifty Mozambique black soldiers, with a governor. The fort contains only a few rusty cannons.

The country near the shores of the bay is low, marshy, and unhealthy; but at no great distance from it the ground rises, is healthy, well peopled, and comparatively well cultivated. It is inhabited by three or four tribes, independent on each other. (London, *Geographical Journal*, iii.; and Threlfall, in Bannister's *Humane Policy, or Justice to the Aborigines, &c.*)

DALAI LAMA. In the article Buddha it is noticed, as an essential point in the faith of the Buddhists, that on the death of the founder of their sect, his soul became immediately re-embodied in the person of another religious chief of the Buddhist community, and that in this manner the same Buddha continued to reappear among his followers in a succession of spiritual rulers, who have by some writers very appropriately been called Buddhist patriarchs. From the time when the last of these patriarchs quitted India and took his abode in China (*i. e.*, towards the close of the fifth century of our æra), we hear of more than one spiritual chief, subordinate to the patriarch, appearing at the same time in the several countries in which Buddhism has become the prevailing religion. Chinese historians make mention of them under the honorific appellations of Proceptor of the Kingdom, Prince of the Faith. It seems at an early age to have become a matter of policy with the secular sovereigns of Buddhist countries to attach these religious chiefs to their interests; and thus was laid the foundation of an hierarchical system, which subsequently developed itself to an extent without a parallel in history. For eight centuries the Princes of the Faith continued in comparative obscurity at the courts of Buddhist sovereigns; and it was not till the thirteenth century that the chief residing at Putala, in Tibet, was by the victories of the Mogols, under Genkis khan and his successors, raised to the rank of supreme pontiff of the sect. A separate province in Tibet was assigned to him as his own territory; and besides his spiritual dignity he became, to a limited extent, a temporal monarch. The Tartars, who in the fourteenth century put an end to the Mogol power in Tibet, paid even greater deference to the Buddhist pontiff. Eight subordinate chiefs, or rather as many inferior incarnations, were appointed to act as his council: and titles expressive of his transcendent power and authority in spiritual matters were conferred upon him. The word Lama, which properly signifies a priest, became from that time an illustrious appellation. The title Dalaï Lama, *i. e.*, 'The Priest who resembles the ocean (in greatness of mind),' has been applied to the pontiff since the beginning of the sixteenth century. Occasions for jealousy and contention between the pontiff and the other spiritual chiefs, who resided in various parts of Chinese Tartary, could not be long wanting; and we find that the Tartar princes, among whom the possession of Tibet and the neighbouring countries was at different times contested, availed themselves of these dissensions for the advancement of their own interests. With all their professed veneration for the spiritual character of the Dalaï Lama, we hear of more than one instance of his being deprived of his dignity and even of his life. Such the condition of the Tibetan hierarchs seems to have remained till within recent times. The predecessor of the Lama, to whom Turner was sent as ambassador from the Bengal government, had been invited to visit the emperor of China, and died soon after his arrival at Pekin (in 1780), under circumstances which justified the suspicion of his having been poisoned. [Lamas.] (A. Rémusat, *Mélanges Asiatiques*, vol. i. p. 129—145.)

DALECARLIA, properly DALARNE (the valley country), a province of Sweden, extends from 60° 55′ to 62° 12′ N. lat., and from 12° 30′ to 16° ′40 E. long. Its surface is 12,225 square miles, or more than twice the area of Yorkshire. On the north it borders on Heriedalen, on the east on Gertrikland, on the south on Westmanland, Nerike, and Vermland, and on the west on Norway.

The mountain-ridge, which divides the sources of the two rivers Dalelf from Lake Fämund in Norway, rises to between 3000 and 4000 feet above the sea. It is a southern offset of the Kölen (pronounced Tioelen) range, and from it there branch off three ridges of considerable elevation. The most northern separates the river Ljusnaelf from the Oester Dalelf; the middle, the Oester Dalelf from the Wäster Dalelf; and the southern runs between the Wäster Dalelf and the Klarelf. These ranges subside into hills before they reach the meridian of the Lake of Silian. The country about this lake presents a pleasant intermixture of hills, valleys, and plains, and may be compared to the lower parts of Switzerland for scenery. But the whole country still preserves a considerable elevation, the surface of Lake Silian being about 560 feet above the sea. The eastern districts are also uneven, but the heights are rather round-backed hills than mountains, and are usually covered with wood. Numerous lakes of different size lie between them. It is only on the borders of Gestrikland that plains of any extent occur.

Like the other parts of Sweden, Dalecarlia abounds with rivers and lakes. The principal river is the Dalelf, which originates in two powerful branches on the mountain-range forming the western boundary. The Oester Dalelf runs south-east, and after traversing the Lake Silian unites with the Wäster Dalelf, which originates a little farther south, and in the beginning is called Fuluelf. It runs south-south-east, but near Apelbo it turns suddenly to the east, and continues in that direction to its junction with the Oesterelf. The united river Dalelf runs south-east to Avestad, and hence north-east to its entrance into the Gulf of Bothnia. About six or seven miles from its mouth it forms the cataract of Elfcarleby, the rival of the famous cataract of Schaffhausen in height and beauty. The Lake Silian is from twenty-seven to twenty-eight miles long, and fifteen broad, where widest. It contains several fine islands, on one of which is a church. The Lake Runn is about ten miles long, and five wide.

The winter in this province is long and severe, the summer short and hot. Wheat does not succeed, but rye and barley are raised, though both frequently suffer from the early night-frost in autumn. The agricultural produce does not meet the demands of the scanty population, and the tender bark of pines is mixed with the bread, and also used as fodder for cattle and hogs. The cultivation of potatoes is rapidly increasing.

The usual domestic animals are reared, but hogs are rather scarce. Game is abundant, especially different kinds of woodcocks, blackbirds, geese, ducks, and swans. Wolves and bears frequent the numerous and extensive forests. Fish abounds in all the lakes, except those near Falun.

The forests consist of birch, ash, aspen, pines, and fir, but they seldom grow up to timber trees. The fruits of some kinds of *rubus* are gathered for domestic use.

Near Falun are found copper, silver, gold, and brimstone. To the north of Elfedalen, on the Oester Dalelf, are quarries of beautiful porphyry, in which a small number of workmen are employed: the porphyry is made into vases, candlesticks, &c. of great elegance.

The population amounts to about 140,000, or a little more than 11 to each square mile. Except in the neighbourhood of Falun, to which place they are attracted by the mines, the population is dispersed over the country in villages, some of which are of considerable size. The Dalecarlians are distinguished by their stature, courage, spirit of independence, and frankness of character. The part which they took under Gustavus Vasa, in liberating their country from the tyranny of Christian II., is always fresh in their memory, and makes them feel proud of their name.

Dalecarlia forms one administrative province, or Län, called Falun Län, or Kopparbergs Län. The governor resides at Noor. Falun and Avestand are the most considerable places. [Falun.] Nothing is exported but the produce of the mines and game, especially birds. (Thomson; Schubert's *Reise durch Schweden;* Harrison; Forsell, *Statistik öfver Swerige.*)

D'ALEMBERT. [Alembert, D'.]

DALGARNO, GEORGE. The following short notice of this original but neglected author is in Anthony-à-Wood's *Athenæ Oxonienses*, vol. ii., p. 506. 'The reader may be pleased to know, that one George Dalgarno, a Scot, wrote a book entitled "Ars Signorum, Vulgo Character Universalis et Lingua Philosophica," London, 1661. This book before it went to press the author communicated to Dr. Wilkins, who, from thence taking a hint of greater matter, carried it on, and brought it up to that which you see extant. This Dalgarno was born at Old Aberdeen, and bred in the university of New Aberdeen; taught a private grammar-school with good success for about thirty years together in the parishes of St. Michael and St. Mary Magdalen in Oxford; wrote also "Didascalocophus, or the Deaf and Dumb Man's Tutor;" and dying of a fever on the 28th August, 1687, aged sixty, or more, was buried in the north body of the church of St. Mary Magdalen.' According to the above account, Dalgarno was born in or before the year 1627, and he must have been residing at Oxford in the year 1657; whether previous to that time, it does not appear, but it may not be erroneous to conclude that he went to Oxford to avail himself of the advantages of that seat of learning. Perhaps he lived there in the twofold capacity of student and teacher: Anthony Wood's work professes only to give a history of all the writers and bishops who have had their education in the famous university of Oxford, &c. From the works which Dalgarno left behind him, it may be concluded that he was a man of original talent, and of great acquirements; his speculations concerning a universal language, a favourite subject with the learned men of his time, undoubtedly preceded those of bishop Wilkins, at that time dean of Ripon, and he received the testimony of Dr. Seth Ward, the bishop of Salisbury, Dr. John Wallis, and others, that he had discovered a secret 'which by the learned men of former ages had been reckoned among the desiderata of learning.' We have carefully sought for some acknowledgment of the merits of Dalgarno in the 'Essay towards a Real Character' of bishop Wilkins, but the name of this obscure man is not once mentioned, though assistance from others is noticed, among whom the name of Dr. Ward appears. Wilkins's work was published in 1668. Its appearance had been delayed for two years in consequence of the whole impression, when nearly printed, with the exception of two copies, having been destroyed in the great fire of London. Allowing for this delay, Dalgarno's work had the priority by several years, and Dr. Wilkins had the advantage of seeing it 'before it went to press.' This treatise, 'Ars Signorum,' &c., exhibits a classification of ideas, and a series of arbitrary signs or characters adapted to the classification, so as to represent each idea by a specific character, without reference to any language of words. All those persons who are acquainted with the Essay of Wilkins will see the germ of it in this design of Dalgarno's. The Didascalocophus develops views on the instruction of the deaf and dumb, both comprehensive and practical. It is a truly philosophical guide, by which the writer shows how capable the deaf and dumb are of understanding and applying a written language, and of their capacity to speak and to understand the speech of other persons. He shows that the art of teaching this class of persons requires the exercise of common sense, perseverance, and ordinary patience, under a teacher, fertile in expedients, and one who is able to turn even disadvantages and difficulties to a good account. How rational is the following: 'When your scholar is got over this difficulty of knowing and writing his letters, then imitate the way of the nursery. Let *utile* and *jucundum*, variety and necessity, invite and spur him on; specially if he be young, or of a lache (trifling) temper. You must not be too grammatical in teaching, till you find his capacity will bear it; he must not be dealt with as school-boys, who are often punished for not learning what is above their capacity. It is enough for him to understand the word or sentence proposed, without parsing every word or syllable; for this is all the use of language that not only children, but even people of age that are illiterate have.' (*Didascalocophus*, p. 53.) Much might be extracted from this little treatise to show how correct were Dalgarno's ideas on general instruction, as well as how accurately he had employed his thoughts on the teaching of the deaf. His style is quaint and pedantic, and rather abounds with long and technological words, which serve to exhibit the learning of the author more than to increase the perspicuity of his work. But this must be excused; it was the garb which learning assumed in his day. In the article Dactylology a representation of Dalgarno's hand-alphabet is given. It is a gratification to find that his works are likely to be preserved, as they have been privately reprinted by Lord Cockburn and Mr. Thomas Maitland, and presented to the Maitland Club of Glasgow. Mr. Dugald Stewart has on more than one occasion paid a tribute of respect to Dalgarno; he mentions him in a note annexed to the first volume of the 'Philosophy of the Human Mind,' as the author of a very ingenious tract, entitled 'Ars Signorum;' and in his account of James Mitchell, a boy born blind, and deaf and dumb, he says, 'I feel myself called on to lay hold of the only opportunity that may occur to me, of rescuing from oblivion the name of a Scottish writer whose merits have been strangely overlooked both by his contemporaries and by his successors. The person I allude to is George Dalgarno, who, more than a hundred and thirty years ago, was led by his own sagacity to adopt, *à priori*, the same general conclusions concerning the education of the dumb, of which the experimental discovery, and the happy application, have, in our times, reflected such merited lustre on the name of Sicard.'

DALKEITH. [Edinburgh, Shire of.]

DALMATIA, the Kingdom of, the most southern possession of the crown of Austria, consists of a narrow maritime tract and numerous islands, forming part of the eastern boundary of the Adriatic, and lying between 42° and 45° N. lat. and 14° and 19° E. long. The Generalate of Carlstadt, in Hungary, bounds it on the north; the Turkish sandshak of Iskenderia on the east; and the Adriatic on the south and west. It is not a compact territory, inasmuch as the circle of Ragusa is disjoined from the rest of Dalmatia by two tongues of land, the Klek on the west, and the Suttorina on the east, which are Turkish. The area, inclusive of the islands, and according to the most recent estimate, is about 5098 square miles: Blumenbach, however, states it to be 5743. Dalmatia is divided into four circles, Zara and Spalatro, which constitute Old Dalmatia, and Ragusa (the territory of the former republic of that name) and Cattaro, which form New Dalmatia. The whole surface of Dalmatia is a series of mountain-ranges, some of which extend even into the Adriatic, and form islands with their loftier summits. With the exception of the Vellebich on the Hungarian border, which belongs to the Julian Alps, all these ranges are continuations of the Dinaric Alps. The loftiest summits among them are the Dinara, which is 5670 feet high, and gives its name to the main chain, the Promina, north of Dernis, 3610; the Svilaya, east of Dernis, 4750; Mount Mosor, 4210; Mount Marian, on the peninsula next Spalatro, and the Biokovo, near Macarsca, which is 5520 feet. To the south of these lie the ranges of Ragusa and Cattaro, among which is the Duboviczа, the most southern mountain in the Austrian dominions. The Montenegrin heights encircle the gulf of Cattaro. The general character of the Dalmatian mountains is bleak and bare: they are full of fissures, ravines, and chasms, and in many places altogether without soil. Limestone is the prevailing rock. The numerous islands which line the coast have originated in the breaking up, by some violent action, of masses of clay and sandstone, while the limestone masses, being of firmer composition, have been left standing. The whole line of coast is barren and naked, except along the narrow tract between the Adriatic and the base of the mountains; forests and underwood lie interspersed at their feet; the background is formed by a continued line of dreary precipitous heights, seldom less than 2500 feet in elevation. The coast is indented in numerous points, and affords abundance of excellent harbours. The interior of the country is furrowed by glens and valleys, many of which are stony and sterile; even the plain extending from Novegradi to the Kerka is covered with stones. On the whole, there is no part of the Austrian empire which has so wild and desolate an aspect as Dalmatia.

Few countries are so poorly supplied with water, many parts being destitute of water fit even for the use of cattle: the islands in particular suffer greatly. The Dalmatian rivers run mostly from east to west into the Adriatic. Among the larger streams are the Zermanya (antiently the Tedanius), which enters from the Hungarian Military Frontiers, and, after a course of about 27 miles, falls into the bight of Morlach, near Novigrad; the Kerka (antiently the Titius), which rises above Knin, issues from a grotto, forms several cascades and five magnificent falls, particularly that by Scardona, in its course of about 51 miles, and, after receiving the Cicola, flows into the Adriatic near Sebenico. The Cettinu (Tilurus or Nestus), which springs from the foot of the Yerebiza, near Vrilo, has two falls in its course of about 60 miles, one of which is from 90 to 100 feet in height, and occurs near Velika-Gubowicja: the banks of this river are extremely wild, and generally precipitous, until it reaches a fine valley near Amissa, where it enters the Adriatic. The Narenta (Naro of the antients), the broadest river in Dalmatia, enters it from Turkey, and, after watering it for about ten miles, parts into two channels at Fort Ovus, and reaches the canal of Narenta through ten arms. Its waters are saltish until it receives the Norin at Torre di Norin. Among the smaller rivers are the Sinkotina and Ombla.

The islands along the Dalmatian coast form several fine channels, which are sheltered from the stormy waves of the Adriatic: they are here called canals, and take their names from the adjacent islands; such are the canals of Morlak, Quarnerola, Zara, and Pasman, Mezzo, Spalatro, Lissa, Curzola, Narenta, &c.

Dalmatia is full of lakes, all of which become more or less dry in hot weather, except the Vrana, to the south-east of Zara, which is separated from the Adriatic by a narrow tongue of land, contains an area of about 8570 acres, and has brackish water. The lakes of Novigrad, Yezero (the dry bed of which is at times cultivated), Narin, Kadin, Trocklian, Prelosaz, &c. become dry at certain seasons from the want of natural springs. None of the numerous mineral springs have yet been turned to account, except the warm sulphureous springs at Spalatro and Salona.

No part of the Austrian dominions is so hot as Dalmatia. In the lowlands the date-bearing palm, the American aloe, and the Cactus opuntia thrive in many districts in the open air. The almond blossoms in January. Among the mountains, where the snow sometimes continues till May and even June, the climate is much bleaker. Near the coasts of Zara, about the canal of the Narenta, and elsewhere on the Adriatic, the exhalations which arise from extensive swamps render the climate very unhealthy. Winter is characterized by six weeks of uninterrupted rain.

The arid character of the soil renders Dalmatia on the whole unsuited to agriculture. But there are parts of the country, such as the districts around Dernis, Muk, and Sign, which might be cultivated with success, but for the indolence and ignorance of the people. The want of water and sheltering woods is another obstacle to cultivation. Turkey and Hungary supply the constant deficiency in the crops of grain, which do not furnish more than six or at most eight months' consumption. The whole amount of arable land does not exceed 191,190 Paduan campi. Barley and oats are the corn mostly grown. Figs may be termed almost the staple produce of the country: the export is about 845,000 pounds weight yearly. The oil is of superior quality, and used by the natives instead of butter; yet above 21,000 barrels are annually exported. Much wine of a strong quality is made; the deeper the colour, the more powerful the liquor: the Vino Nero, a red wine, is nearly black, and the white wine as deep in colour as Malaga: the Marzenin del Teodo is the best. About 8,000,000 gallons (the whole produce being about 9,120,000) per annum are exported to Fiume, Trieste, and Venice. Almonds, dates, dried currants, citrons, pomegranates, oranges, and other fruits are exported. The country abounds in timber, but being in the interior, it is almost inaccessible: the forests in the neighbourhood of the coast have been exhausted. The coast fisheries employ about 8000 hands: the staple kinds of fish are the sardinia and the tunny, both of which are exported in a dried or salted state. The rivers too are well supplied, particularly with the salmon-trout, which attains an enormous size. Altogether, the value of this branch of trade is estimated at 300,000*l.* a year and upwards. At some spots the coral fishery is productive, especially near Sebenico. The Morlaks convert the fat of the frog into an oil, which they employ for various purposes. Honey and wax are produced in some quantities.

The rearing of cattle is on a limited scale: the breeds are inferior and small: the whole stock of oxen, cows, sheep, and goats is not estimated at more than about 800,000, of which 53,000 only are oxen. The number of draught and saddle-horses is about 22,500, and of mules about 3906. Pains are taking, by the introduction of Merinos, to improve the breed of sheep, the native race being of diminutive size, and the fleece short and coarse. The stock of goats and swine is limited; but poultry, except geese and ducks, plentiful. There has in fact been a great diminution in the number of horses, cattle, and sheep during the last thirty years; for it appears by the returns of 1808 to have amounted at that time to 1,271,218, of which there were 1,105,078 sheep alone.

Of wild animals, Dalmatia possesses the Ciaghlo, or wild dog, wolf, fox, and hare, but it has no deer: swans, pelicans, falcons, vultures, owls, turkeys, and other wild fowl are abundant.

Dalmatia is rich in minerals, particularly limestone, gypsum, coal, pitch, asphaltum, and sea salt. No precious metals have been discovered, although Pliny (iii.) reports that the Dalmatian mines yielded as much as 50 pounds weight of gold per diem in Nero's time. These mines, however, cannot have been within the limits of the present territory of Dalmatia.

The majority of the inhabitants are descendants of the Sclavonian hordes, who invaded these parts in the seventh century and drove out the old inhabitants. The language of the country is the Herzogovine dialect of the Sclavonian, but Italian is the prevalent tongue among the well-educated classes, and is used in the public offices and courts. The remainder of the population is composed of Italians (about 40,000), who are spread throughout the maritime towns and sea-coast; Bosnian Greeks (about 10,000) and Servian Morlaks (about 80,000), both of whom took refuge here from persecution in the fourteenth century. The Morlaks or *Moroflachi, i. e.* Servians, who dwell next the sea (*Moro*), inhabit the mountain-districts of the Zara and Ragusa and some of the islands: the wild Montenegrin is of this race. The population of Dalmatia, which had been on the increase in the early part of the present century, inasmuch as the numbers rose from 256,863 in 1808 to 305,671 in 1815, and 324,075 in 1822 fell to 323,112 in 1825, and according to Blumenbach, cannot now be estimated at more than 320,000. In general the Dalmatian is of good stature, muscular, robust, hardy in his habits, and frugal in his diet· he lives much in the open air and under tents. The poorest man drinks his wine, and eats his salad, fig, and melon: he is hospitable and talkative, but cunning, and addicted to lying and theft. There are some Germans and about 500 Jews settled in the country, the latter of whom are the descendants of Spanish colonists, who were expelled from Spain about the year 1502. Some few Greeks are settled in Dalmatia, as well as several tribes of gipsies, in number about 1800, who chiefly haunt the neighbourhood of Verlika and Sign.

The Roman Catholic, which is the established religion, is professed by at least four-fifths of the people. The ecclesiastical establishment consists of the archbishop of Zara and the 5 bishops of Spalatro, Ragusa, Sebenico, Lesina with Lissa, and Brazza and Cattara: they have under them 378 cures of souls, 60 monasteries, and 9 nunneries. The inhabitants, who profess the Greek faith, are in church-matters subordinate to a bishop resident at Sebenico and the vicar-general at Cattaro, under whom are 11 monasteries and 119 benefices.

Dalmatia is divided into the following circles:—

	Area.	Number of Inhabitants.	Districts.	Towns.
	Sq. M.			
Zara . . .	2121	114,000	7	Zara, cap. of Dalmatia, 7900 inhabitants; Sebenico, 4000; Scordona, 1200.
Spalatro or Spalato .	2656	133,000	10	Spalatro, cap., 7200; Trau or Troghie, 2900; Macarsca, 1300.
Ragusa . .	588	41,000	6	Ragusa, cap., 5000; Curzola, 6200.
Cattaro . .	378	32,000	3	Cattaro, cap., 2600.
	5743	320,000	26	

The circle of *Zara* comprises the Quarneric, Dalmatian, and Culadic islands; that of *Spalatro*, the islands of Zirona Grande, Bua, Solta, Lissa, Brazza, and Lesina; and that of *Ragusa*, the islands of Calamotta, Meleda, Lagosta, Curzola, and Pelagosa Maggiore.

Dalmatia contains 9 municipal towns, 14 market-towns, and 988 villages, and about 63,500 houses. The will of the sovereign is the law of the land, and there is no representative body or provincial states as in the native dominions of Austria; but certain districts and towns have been allowed to retain the rights and privileges which they possessed when under the dominion of the republic of Venice. Poglizza alone, a mountain district of about 16,000 or 17,000 souls, including several Hungarian and Bosnian nobles, in the circle of Spalatro, is so far independent that it elects its Gran Conte, or governor, and its local elders and magistrates, in the general assembly of the people called Zdor, which is held every year in the plains of Gatta. Every male is a soldier, and the district pays a tribute in lieu of taxes. The general administration of affairs in Dalmatia is vested in the Gubernium or government-board established at Zara, which receives its instructions from the Chancery and minister of the Home Department in Vienna. Each circle is divided into districts; each district into 'Haupt-gemeinden,' or head communities; and each of the latter consists of 'Unter-gemeinden,' or subordinate communities. At the head of each circle, in civil matters, is a 'Pretoria;' of each head community, a 'Podesta,' or 'Sandako;' and of each subordinate community, a 'Capo-villa,' or 'Casnazzo.'

The revenues of Dalmatia arise from the imperial domains, which yield about 10,000*l.* per annum; the regalia, which include the monopoly of salt, about 25,000*l.*; the direct taxes, about 39,000*l.*; and the indirect taxes, about 21,000*l.*: altogether about 95,000*l.* a year. Von Lichtenstern estimates the expenditure, exclusive of the military establishments, at about 72,900*l.* per annum. Dalmatia furnishes four battalions of Sharpshooters for the imperial service.

The manufacturing industry of this country is very small, and scarcely adequate to supply its common wants: it is confined to the townspeople, and its main branches are shipbuilding and the distillery of spirits, among which the liqueur called Maraschino-Rosoglio has obtained European celebrity. Here and there a little flax and cotton are spun, and small quantities of woollen cloth, coverlids, house linen, tape, and coarse cottons, twine, cordage, and nettings, soap, vinegar, leather, and hats are made. For every other article of necessity or comfort Dalmatia is dependent on other countries. 'There is clay,' says Blumenbach, 'but no potter; quartz, but no glass-work; timber, but no carpenter; lime, but no kiln; coals, but no mine; iron, but no furnace; skins, but no leather-maker; and rags, but no paper-mill. To this hour the hand-mill is universally used.' What must be the state of a country of which even a native can thus write!

Favoured as Dalmatia is by its situation and numerous ports, its commerce is comparatively small. The principal countries with which it trades are the maritime provinces of Austria, Italy, and Turkey. To the first two countries it exports wine, olives, oils, brandy, figs, salt, pitch, bark, salted fish, hides, wool, wax, honey, fruit, &c., and to Turkey the same products, besides foreign produce and manufactures. It has also some transit trade. Its returns from Turkey consist of horned and fatted cattle, cheese, wools and hides, corn, wood for fuel, drugs, &c. Dalmatia is not included with the other Austrian possessions under its onerous system of customs-imports, and its trade is therefore almost unshackled. The Dalmatians are well known in the Adriatic and Mediterranean as excellent mariners, and possess between 2900 and 3000 vessels of their own, varying in burthen from 40 to 500 tons: their best ships are constructed along the coast of Cattaro.

The Austrians found the country in a wretched state of ignorance, for the Venetians had done nothing whatever for its intellectual improvement. But the present government has commenced the good work by making pecuniary grants for the establishment of schools for the lower orders, and for encouraging the clergy to give instruction to their flocks. A normal seminary and school for girls have been opened at Zara; national schools of a superior class have been established at Spalatro, Macarsca, Ragusa, Cattaro, Sebenico, and Lesina, independently of the schools attached to the convents. And for the more affluent classes, gymnasia have been instituted in Zara, Spalatro, and Ragusa, and a lyceum or species of university at Zara, in which town there are likewise an ecclesiastical seminary, an obstetrical school, and a college for educating 37 pupils at the public expense. The benevolent institutions are as yet confined to the hospitals and foundling asylums at Zara, Sebenico, Spalatro, Lesina, and Cattaro, and the infirmary at Ragusa.

Dalmatia derives its name from the Dalmatine, a small district between Sebenico and Scordona. Its territory in former days was much more extensive than at present. The Dalmatians long resisted the Romans, but Augustus brought them under the Roman dominion. (Strab., p. 315.) After the fall of the western empire, the country became a prey to the Goths and Avari successively, and the latter maintained possession of it until the beginning of the seventh century, when they were driven out by swarms of Sclavonians. This people erected it into an independent sovereignty, which endured until overthrown by Ladislaus, king of Hungary, in the early part of the eleventh century: this monarch annexed the whole of it, the maritime towns only excepted, to the dominion of the Magyárs. These towns, among which was Zara, the most important of them, had long been under the special protection of Venice, which availed itself of the connexion to extend its sway over other parts of the country, and bring the greater part of Dalmatia under subjection. That portion which lay on the right bank of the Zermanya, and which Hungary retained, lost the name of Dalmatia altogether; and the same occurred with regard to the portion which forms part of Bosnia, and fell into the hands of the Turks, by whom it was erected into the sandshak of Hersek. The Austrians acquired the Venetian part of Dalmatia in 1798 under the treaty of Campo Formio. (Blumenbach; *Austrian Encyclopædia*; Von Lichtenstern; Hassel; Stein; Roprer, &c.)

DALRYMPLE FAMILY. The surname of this family is derived from the lands of Dalrymple, in the shire of Ayr, of which, in remote times, the chief of the house was proprietor. The family appears to have been of importance very early, for in the reign of King Robert III., Duncan Dalrumpill had a charter of the office of Toscheodorach (or principal executive officer of the crown) in Nithsdale; and in 1462 James de Dalrymple was clericus regis.

The lands of Stair, whence the viscounty and earldom are derived, came into the family by William de Dalrymple, who became possessed of them in the middle of the fifteenth century by his marriage with his relation, Agnes Kennedy, heiress of the estate. The son of these parties married a daughter of Sir John Chalmers, of Gadgirth, in the same shire, whose first ancestor had held the high office of chamberlain of Scotland; and in lineal descent from him was James de Dalrymple of Stair, who married Janet, daughter of Kennedy of Knockdaw, and by her had

JAMES DALRYMPLE, first viscount Stair. He was born in May, 1619, at Dummurchie, in the parish of Bair, county of Ayr, and lost his father before he had attained his fifth year. At that tender age he was left under the guardianship of his mother, who survived her husband pwards of thirty years. His early education was acquired t the school of Mauchlin, whence, at the age of fourteen ears, he was removed to the college of Glasgow, where, pplying himself closely to his studies, he gained the aprobation of his teachers, and qualified himself for taking e degree of A.M. in 1637. He left college the following ear, and at the breaking out of the civil war obtained a aptain's commission in the earl of Glencairn's regiment.

About this time the chair of philosophy in the university f Glasgow became vacant, and having, by the advice of me of the professors, become a candidate, he was in 1641, eing then twenty-two years old, appointed to the place fter a comparative trial. It was then the practice for very regent to swear at taking office to demit on his mariage. This Dalrymple did, and having in 1643 married argaret Ross, co-heiress of the estate of Balneil in Wigton, e resigned the chair, but was soon afterwards re-appointed. n this place he sedulously pursued his studies, and paricularly the study of the civil law, with the view to the rofession of the law, in which a knowledge of the Roman urisprudence was then of great moment. In 1647 he esigned his chair, came to Edinburgh, and after the usual rials, was admitted an advocate on the 17th February, 1648. The following year he was appointed secretary to he commissioners sent by the Scottish parliament to treat with Charles II., then an exile in Holland, for his return to his native dominions. He held the same office in the more uccessful mission of 1650, and was on that occasion particularly noted for his 'abilities, sincerity, and moderation.' In 1654 we find him on a committee of four, deputed by the Faculty of Advocates to wait upon the judges for the purpose of getting the antient form of the Outer House restored; and he was indeed well known both at the bar and in the country.

During the Protectorate he was recommended to Cromwell by General Monk, as a fit person to be one of the judges of the court of session. In his letter, dated from Edinburgh, 23rd June, 1657, Monk says, 'I make bold to mention to your highness one Mr. James Dalrymple, as a person fit to be a judge, being a very honest man, a good awyer, and one of considerable estate. There is scarce any cotsman, or Englishman who hath been much in Scotland, but knows him, of whom your highness may enquire rther concerning him.' The general wrote again to the rotector on the subject a few days after, and on the 1st July, 1657, Dalrymple took his seat on the bench.

At the Restoration he went to London with the earl of Cassilis to pay his respects to the king. On that occasion the honour of knighthood was conferred upon him; and by letter, dated Whitehall, 14th February, 1661, he was also ominated one of the lords of session. He was soon afterwards much annoyed however by the declaration enacted n 1663, and continuing to refuse signing it, his place was eclared vacant 19th January, 1664. He thereupon set out with his eldest son on a tour to the continent; and having aited on the king at London on his return, his majesty llowed him to qualify his subscription to the Declaration, and restored him to his seat. As a farther proof of the oyal favour, he was created a baronet on the 2nd June of he above year, 1664; and on the resignation of Sir John ilmour, he was appointed president of the court of session th January, 1671.

On the 28th February, 1672, his eldest son, *John*, was dmitted an advocate before the court: on the 25th June, 675, his next son, *James*, was admitted; and his third on, *Hew*, on the 23rd February, 1677. A short time before his last date, the town-council of Edinburgh, 'having aken into consideration the many great and signal services one to the city by Sir James Dalrymple, president of the ourt of session,' resolved that his house-rent should be aid by the town during his life, as also that of all his sucessors in office.

Dalrymple continued president till the year 1681, when, on ccount of his conduct on occasion of the Test Act, he was uperseded, and found it necessary to retire into Holland.

In 1681 he published his 'Institutions of the Law f Scotland,' the work of a great and philosophic mind, ut one deeply imbued with the principles of the Roan jurisprudence: it gave consistency to the body of cots law; and till our own day has guided the determinaions of the Scottish lawyers. From his retirement at eyden he transmitted to the Edinburgh press his 'Deisions of the Court of Session from 1661 to 1681;' the first volume appearing in 1684, and the second in 1687. And in 1686 he published at Leyden his 'Philosophia Nova Experimentalis.' He also busied himself about this time on a work relating to the mutual obligations of the sovereign and his people, but it was never published.

On the accession of King James II., Dalrymple's eldest son was appointed lord advocate of Scotland in the room of Sir George Mackenzie; and in this place he had influence enough to procure a pardon for his father, who, on the testimony of Spence, the secretary of Argyle, had been prosecuted and outlawed for his alleged concern in the Ryehouse Plot. Sir John held the situation of lord advocate for about twelve months, when he was appointed successor to Foulis of Colinton, both as lord justice clerk and as an ordinary lord of session. His father, on coming over to this country with the Prince of Orange, with whom he had been much in favour while in Holland, was reinstated in the presidency of that court; and on the 21st April, 1690, raised to the peerage by the style and title of viscount Stair. The same year Sir John was re-appointed lord-advocate; and the next year advanced to be one of the principal secretaries of state, in which latter place he continued till the year 1695, when he was driven from office upon the parliamentary inquiry into the equally impolitic and barbarous massacre of Glenco, as to which he bore so much blame.

Stair died in the end of the same year, on the 23rd November, 1695, shortly after the publication of his work entitled 'A Vindication of the Divine Perfections,' and was buried in the high church of Edinburgh. He was succeeded in his title and estate by his eldest son, who, on the 8th April, 1703, was advanced to be earl of Stair. This person died suddenly on the 8th January, 1707, after a warm debate that day on the 22nd article of the treaty of Union which relates to the number and privileges of Scots peers. By his wife, daughter and heiress of Sir John Dundas, of Newliston, in the shire of Edinburgh, he left a younger son, who was

JOHN DALRYMPLE, second earl of Stair. He was born at Edinburgh on the 20th July, 1673, and in early youth had the misfortune to kill his elder brother by the accidental discharge of a pistol. For some years afterwards he was under the tuition of a clergyman in the shire of Ayr, whence he was at length restored to his father's house.

In 1692, when but a youth of nineteen, he entered as a volunteer under the earl of Angus, commander of the Cameronian regiment, at the battle of Steinkirk. His parents however appear to have been desirous of his adopting the profession of the law, and for that purpose sent him to Leyden; but on his return in 1701 from his travels, he accepted a commission as lieutenant-colonel of the Scots regiment of Foot Guards. The year following he served as aide-de-camp to the duke of Marlborough at the taking of Venlo and Liege and the attack on Peer; and in the course of the year 1706 he successively obtained the command of the Cameronian regiment and the Scots Greys. On his father's death in the beginning of 1707 he succeeded to the earldom of Stair; and was soon afterwards chosen one of the representative peers of Scotland in the united parliament. In the subsequent victories of Oudenarde, Malplaquet, and Ramillies, he held high command and obtained great distinction; but on the accession of the new ministry in 1711, when the career of Marlborough was stopped, he sold out of the Scots Greys, and retired from the army.

When George I. succeeded to the throne the earl of Stair was appointed a lord of the bedchamber and a privy councillor, and, in the absence of the duke of Argyll, was constituted commander-in-chief of the forces in Scotland. The next year he was sent on a diplomatic mission to France; and it would seem that the embassy was distinguished by much skill and address, and at the same time by remarkable splendour and magnificence. He was recalled in 1720, and for the next twenty-two years lived in retirement at his seat at Newliston, where, it is said, he planted various groups of trees in a manner designed to represent the arrangement of the British troops at one of the victories he had been engaged in. He also turned his attention to agriculture, and was the first in Scotland to plant turnips and cabbages in the open fields.

On the dissolution of the Walpole administration in 1742, he was recalled to public life, and served in a military capacity on different important occasions till his death, which happened at Queensberry-house, Edinburgh, on the 9th May, 1747. He left a widow, but no children.

His next brother, *William Dalrymple*, of Glenmure, who was a colonel in the army, married Penelope, countess of Dumfries, and their issue succeeded to the earldom. His youngest brother, *George Dalrymple*, of Dalmahoy, passed advocate, and on baron Smith's advancement to the chair, was made a puisne baron of Exchequer, in which situation he continued till his death in July, 1745. More lately, there was on the bench of the same court, a member of another branch of the same family, Sir *John Dalrymple*, of Cranstoun, Bart., who was appointed in 1776 one of the barons of the Exchequer, and so continued till the year 1807, when he resigned. He was the author of 'Memoirs of Great Britain,' 'Tracts on Feudal Law,' and other publications. He was descended from *James*, second son of the first viscount Stair, who was author of 'Collections concerning Scottish History preceding the Death of David I.,' and who was created a baronet on the 28th April, 1698, the day previous to his younger brother, *Hew Dalrymple*, of North Berwick, being raised to the like dignity.

This Sir Hew Dalrymple was some time one of the commissaries of Edinburgh, having been appointed to that place on the resignation of his brother James, when the latter was made one of the principal clerks of session. He had also been some time Dean of the Faculty of Advocates; and was now, on the occasion of his being created a baronet, promoted at once from the outer bar (like the predecessor of his father, Sir George Lockhart, and in more recent times Mr. Blair, the only instances in the history of the court) to the presidency of the Court of Session, which had remained vacant since his father's death in 1695. President Sir Hew Dalrymple collected the decisions of the court from his appointment till the 21st June, 1720, and continued in the chair till his death, which took place on the 1st February, 1737, in the eighty-fifth year of his age. Lord Woodhouselee says of him in his Life of Kames,—'If he inherited not the distinguished talents of his father the viscount of Stair, and his elder brother the secretary he was free from that turbulent ambition and crafty policy which marked the characters of both; and, with a sufficient knowledge of the laws, was a man of unimpeached integrity, and of great private worth and amiable manners.'

He had a younger son of the same name with himself, *Hugh Dalrymple*, who passed advocate on the 18th November, 1710, and in December, 1726, was made a lord of session under the titular designation of Lord Drummore. He was also, some time afterwards, appointed a lord of justiciary on Erskine of Dun's resignation, and died in the possession of both offices in June, 1755, with the character of an acute and learned lawyer and a very honourable man. By his wife, Anne Horn, heiress of the estates of Horn and Westhall, in the county of Aberdeen, he left a large family, one of whom was *David Dalrymple*, of Westhall, who passed advocate tn the beginning of 1743, in the twenty-third year of his age, and in 1746 was chosen procurator (or advocate) to the Church of Scotland. In 1748 he was also constituted sheriff depute of the shire of Aberdeen, and he continued in both offices till July, 1777, when he was made a lord of session under the title of Lord Westhall. His elder brother assumed his maternal surname of Horn, and marrying Mary, daughter and heiress of Sir James Elphinstone, of Logie, assumed the additional surname of Elphinstone, and had by his wife a son, who, on the 16th June, 1828, was created a baronet by the style and title of Sir *Robert Dalrymple Horn Elphinstone*, Bart., of Horn and Logie Elphinstone. A younger branch of the same family had, a few years before, been raised to the like dignity in the person of Sir *Hugh Whiteford Dalrymple*, of Highmark, in the county of Wigton, who was created a baronet on the 6th May, 1815.

The youngest son of the first Viscount Stair was Sir *David Dalrymple*, of Hailes, Bart., so created on the 8th May, 1700. He passed advocate on the 3rd November, 1688, and in 1709 was appointed lord-advocate of Scotland in the room of Sir James Stewart, who was however reinstated in the office in the year 1711. On Stewart's death, Sir David was again appointed lord-advocate, and continued till May, 1720, when he was succeeded by Robert Dundas, of Arniston, who also succeeded him on his decease, the following year, in his place of Dean of the Faculty of Advocates. His eldest son was Sir *James Dalrymple*, of Hailes, *Bart.*, some time auditor of exchequer; and by his wife, Lady Christian Hamilton, daughter of the sixth earl of Haddington, the father of a numerous family.

The eldest of these was the celebrated judge and antiquary,

Sir **DAVID DALRYMPLE**, better known by his titular designation of Lord Hailes. He was born at Edinburgh on the 28th October, 1726, and after acquiring the rudiments of his education in his native place, was sent to Eton, where, with a competent degree of learning, he imbibed that classical taste, and partiality for the manners and customs of England, which distinguished the subsequent periods of his life. From Eton he returned to Edinburgh, whence, after passing through the usual course at the university there, he was sent to Utrecht to study the civil law; and on his return, in 1746, he prepared for the bar, and passed advocate on the 24th February, 1748. After eighteen years of professional life, he was raised to the bench of the Court of Session; and ten years afterwards he was also, on the resignation of Lord Coalston, to whose only daughter he was married in October, 1763, appointed a lord of justiciary. As a judge, his accuracy, diligence, and dignity, were eminently conspicuous; but it is on the broader basis of literary merit that his great fame rests.

The earliest of his publications appears to have been sacred poems, being a collection of translations and paraphrases from scripture, by various authors, Edinb., 1751. His next was the 'Wisdom of Solomon, and the Book of Ecclesiastus,' 1755. The same year he wrote in 'The World' Nos. 140 and 147, and the next year No. 204, in which year also he published 'Select Discourses,' by John Smith, of Cambridge, with a preface and learned notes. The year following, 1757, he republished, with notes, 'A Discourse of the unnatural and vile Conspiracy attempted upon the King by the Earl of Gowry.' In the month of October, 1761, two vessels being wrecked on the shore between Dunbar and North Berwick, and pillaged by the country people, Sir David published a Sermon, from Acts xxviii. 2:—'The barbarous people showed us no little kindness.' In 1762 he published, from the press of Foulis, of Glasgow, 'Memorials and Letters relating to the history of Britain in the reign of James I., of England,' with a preface and notes. From the same press, in 1765, he published the works of the ever memorable Mr. John Hailes, of Eton, in 3 vols.; and the same year at Edinburgh the first specimen of a book entitled 'Ane compendious booke of Godly and Spiritual Songs.' The year following he published 'Memorials and Letters relating to the history of Britain in the reign of Charles I.,' from the originals collected by Woodrow; an 'Account of the Preservation of Charles II. after the battle of Worcester,' drawn up by himself; and the 'Secret Correspondence between Sir Robert Cecil and James VI.' The next year he published a catalogue of the lords of session from the institution of the court, with historical notes; and the following year, 'The private correspondence of Bishop Atterbury and his friends in 1725.' In 1769 he published, first, 'An Examination of some of the arguments for the high antiquity of the Regiam Majestatem, and an inquiry into the authenticity of the Leges Malcolmi:' 'Historical Memoirs concerning the provincial councils of the Scottish clergy, from the earliest account to the æra of the Reformation'; and third, 'Canons of the Church of Scotland, drawn up in the provincial councils held at Perth in the years 1242 and 1269.' And in 1770 he published some antient Scottish poems from MSS., with a number of curious notes and a glossary. His next performance was the additional case of Elizabeth claiming the title of Countess of Sutherland: a singularly able paper, which was subscribed by Alexander Wedderburn, afterwards Lord Chancellor of England, and Sir Adam Ferguson, but well known to be the work of Lord Hailes. In 1773, Sir David published 'Remarks on the history of Scotland;' and in 1776, 'Letters from Hubert Languet to Sir Philip Sydney.' This last year also he published his 'Annals of Scotland, from the time of Malcolm Canmore to King Robert I.'; 'Tables of the succession of the Scots Kings' during the same period; and in 1779, his 'Annals of Scotland, from the accession of Bruce to the accession of the House of Stuart.' In the above year, 1776, he published another work of great erudition; namely, 'An account of the Martyrs of Smyrna and Lyons in the second century,' with notes. This was intended as the first vol. of 'Remains of Christian Antiquity;' the second vol. of that work appeared in 1778; and the third in 1780. The next year he published 'Octavius,' a dialogue by Marcus Minucius Felix, with notes and illustrations; and the year following, the treatise, by Lactantius, of the manner in which the persecutors died, illustrated in like manner by various notes. In 1783 appeared his disquisitions concerning the antiquity of the Christian Church; and in 1786, an inquiry into the secondary causes which Mr. Gibbon has assigned for the rapid growth of Christianity. After this followed some biographical sketches, in separate works, and at different times, but all intended as a specimen of a Biographia Scotica. In 1788 he published from MSS. the opinions of Sarah, duchess of Marlborough; and in 1790, a translation of the address of Q. Septim. Tertullus to Scapula Tertullus, proconsul of Africa, with notes, to illustrate the state of the church in early times.

This was the last work which Lord Hailes lived to publish. On the 29th November, 1792, he expired, in the sixty-sixth year of his age, the baronetcy, for want of male issue, descending to his nephew, *James*, eldest son of *John Dalrymple*, Esq., some time lord provost of Edinburgh, who was brother of Sir David, and also brother of

Alexander Dalrymple, the hydrographer. He was born at New Hailes, the seat of his father, Sir James Dalrymple, Bart., on the 24th July, 1737, and was the seventh son of a family of sixteen children, all of whom he survived. His scholastic education was very limited, partly from the troubles of the times, and partly from the early death of his father; and when scarce sixteen years of age, he went abroad as a writer in the East India Company's service. Owing to his deficiency in the ordinary branches of learning, he was, on his arrival in India, placed under the storekeeper; but at length, through the kindness of friends, he was removed to the secretary's office, Lord Pigot himself giving him some lessons in writing, and Mr. Orme, the historian, instruction in accounts.

In the records of the secretary's office he found certain papers on the subject of a commerce with the Eastern Archipelago; and so interested in the subject did he become, that contrary to Lord Pigot's advice, he refused the secretaryship, and determined on a voyage among the eastern islands. He now also made himself master of the Spanish language by his own efforts, as he had a short time before done in regard to the French. In the course of the voyage he concluded a commercial treaty with the sultan of Sooloo; but not long afterwards the political affairs of that place were altogether changed, and no beneficial effects resulted from the enterprise. He subsequently returned to Sooloo, and re-established a friendly understanding between the inhabitants and the company; but unfavourable circumstances again intervened to prevent the results which were anticipated, and his exertions in England, whither he afterwards came on the same matter, were equally unfortunate. He appears indeed to have been peculiarly exposed to the influence of an adverse fortune; for besides the instances already given, he had, when in England in 1776, been promised by the earl of Egmont, on the urgent recommendation of Lord Howe, to be appointed hydrographer to the admiralty, with a salary of 500*l.* a year, and afterwards of being employed on an expedition of discovery to the South seas, and on a mission to observe the transit of Venus; but from various causes he received none of these appointments. At length, in 1769, the Court of Directors voted him 5000*l.* for his past services, equivalent to the emoluments of secretary at Madras, which he had relinquished in 1759 to proceed on the eastern voyage.

From the time of his return to England, in 1765, he employed himself in collecting materials for a full exposition of the importance of the Eastern islands and South seas: and the Court of Directors, satisfied of the important information he possessed, employed him to draw up several charts of the eastern seas, which were published under their authority.

On Lord Pigot's appointment to be governor of Fort St. George, in 1775, Dalrymple was reinstated in the service of the East India Company, and went out to Madras as a member of council and one of the committee of circuit; but in 1777 he was recalled, with others, under a resolution of the general court, to have their conduct inquired into, though nothing appears to have been done thereupon. Two years afterwards he was appointed hydrographer to the East India Company; and in 1795, when the admiralty at last established the like office, it was given to Dalrymple. This place he retained till 1808. In May of that year the admiralty insisted on his resignation on the ground of superannuation, and it certainly appears that he exhibited symptoms of decayed faculties and an irritable habit. He refused to resign however, upon which they dismissed him from the place; and on the 19th of the following month he died, it is said from vexation, in the seventy-first year of his age.

He left a large library, and rich particularly in works on navigation and geography, a few of which were purchased by the admiralty, and the remainder were sold by auction. His own works amount to about sixty in number; many of them undoubtedly valuable, but some also of a merely personal and transitory character. A list of them is appended to a memoir of the author, furnished by himself, in the 'European Magazine' for November and December, 1802.

DAMAGES (old French *damage*, Latin *damnu*), in law, signifies the compensation that is given by the jury (or assessed by the court) to the plaintiff or demandant for the wrong the defendant has done to him. The word is taken in the law in two several significations; the one properly and generally, the other strictly and relatively. Properly, as it is in cases where damages are founded upon the statute 2 Henry IV. and 8 Henry VI. c. 9, where costs are included within this word damages; for damage, in its proper and general signification, is said (though improperly) to come from *à demendo*, when a thing by diminution is made worse; and in this sense costs of suit are damages to the plaintiff, for by them his substance is diminished. But when the plaintiff declares the wrong done to him, to the damage of such a sum, this is to be taken relatively for the wrong which is passed before the writ brought, and cannot extend to costs of suit, which are future and of another nature. (Cowel's *Interpreter.*)

At common law damages were recoverable in personal and mixed actions, but not in real actions, because, says Sir Ed. Coke, in his commentary on the statute of Gloucester, 6 Edward I. c. i., 'the court could not give the demandant that which he demanded not, and the demandant in real actions demanded no damages, neither by writ nor count.' Till the right to the land was determined, the party could not be said to suffer wrong; but after the recovery, damages might be laid in a personal action; but by the above statute damages and costs are made recoverable in certain real actions, as in 'Dower,' 'Entry sur disseisin,' &c. But such actions were, strictly speaking, mixed, though they were usually denominated real. Though all real actions have been recently abolished, the right to land being now triable in all cases by ejectment, it was necessary to refer to them to explain the nature of damages. In ordinary cases, where the title to land is in dispute, the damages are merely nominal, the actual damage sustained by the detention of the property being recovered in an action of trespass for the mesne profits, except only in ejectment by a landlord against a tenant, where damages in the nature of mesne profits may be given by statute 1 George IV. c. 87, § 2. In all actions which sound in damages (*i. e.*, where compensation for wrong is sought), as assumpsit, &c., the amount of the damages is determined by the jury, though they cannot give more than the amount laid in the declaration. In actions of debt the plaintiff seeks to recover a specific sum, and not a compensation in damages; the damages therefore for the detention of the debt are generally merely nominal, except in those cases where, by the recent alterations in the law, the jury is empowered to give damages in the nature of interest. [Detinue.]

Where the parties have stipulated for a liquidated sum to be paid as damages, the jury are bound to give the full amount of that sum; but where they have stipulated merely for a penalty to be paid [Penalty], the jury may give less, or if the parties do not proceed for the penalty, they may give more. There are several cases in which double and treble damages are given by statute. If the damages given be excessive, the court will sometimes grant a new trial, but not so if they be too small; at least it is very unusual to do so, except in actions on mere money demands or on inquisitions. (Co., *Litt.*; Tidd., *Pract.*)

DAMASCE'NUS, JOANNES, was born at Damascus towards the end of the seventh or the beginning of the eighth century of our æra. His father, Sergius, a wealthy Christian of Syria, was councillor to the caliph, and at his death John succeeded him in the same office. His father had given him for preceptor a monk named Cosmas, whom he had redeemed from slavery. About A.D. 728 he wrote several tracts in defence of image worship against the Iconoclasts, who were then favoured by the Emperor

Leo the Isaurian. A legendary story is told of Leo having forged a treasonable letter from John to himself, which he contrived should come into the hands of the caliph, who sentenced John to have his right hand cut off, when the severed hand was restored to the arm by a miracle. About that time however John withdrew from the caliph's court to the monastery of St. Saba, near Jerusalem, where he passed the remainder of his life in ascetic practices and study. His numerous philosophical and theological works place him among the most distinguished writers of the Eastern church in the eighth century. His principal work is an exposition of 'the orthodox faith,' or Christian doctrines, in four books, which unites the two systems of scholastic and dogmatic theology, the former being by ratiocination, according to the Aristotelian or scholastic method, and the second by the authority of the Scriptures and the fathers. This work attained great reputation in the Greek church, and the author was styled Chrysorrheas, or 'Golden-flowing,' on account of his eloquence. He promoted the study of Aristotle, and wrote various popular tracts, in which he collected and illustrated that philosopher's principles. He wrote also letters and treatises against heretics, especially against the Manichæans and Nestorians. His principal works have been published by Lequien, 'Opera J. Damasceni,' Paris and Venice, 1748, 2 vols. fol.

DAMASCE'NUS, NICOLA'US, a philosopher and historian of the age of Augustus, and the friend of Herod the Great, tetrarch of Judæa, is mentioned by Josephus, Athenæus, Eusebius, and others. He wrote various works in Greek, and among them one on universal history, in 144 books, of which we have some fragments, 'N. Damasceni Historiarum Excerpta et Fragmenta quæ supersunt,' 8vo., Leipzig, 1804: and again in Paris, 1805, edited by D. Coray.

DAMASCUS, a city of Syria, and the capital of an important Pashalik of Asiatic Turkey, is situated in a fertile plain at the east base of the Antilibanus ridge, about 180 miles south by west of Aleppo, in 33° 27′ N. lat., and 36° 25′ E. long. It is one of the most antient towns in the world, being mentioned as existing in the time of Abraham. (*Genesis* xiv. and xv.) Its antient name was Damesk, but the present natives call it Scham, which is also the name of Syria, and sometimes Scham Shereef, *i. e.*, 'the noble.' It is one of the very few places which have maintained a flourishing existence in all ages. Though often taken and devastated, it has always risen again, and has always been mentioned as one of the most delightful situations in the world. It appears to have been in the time of David or of Solomon (1 *Kings* xi., 24) the capital of an independent kingdom, which afterwards, under the name of the kingdom of Syria, was engaged in wars with the Jews. It was subsequently annexed to the empire of Assyria, afterwards to that of Persia: it then fell into the hands of the Macedonians, the Romans, and lastly of the Arabians, A.D. 634, when it was taken by the lieutenants of the caliph Abu-bekr after the defeat of the forces of the emperor Heraclius in its neighbourhood It became for a time the residence of the caliphs, and after other vicissitudes was taken by the Turks under Sultan Selim. In the late war between the Porte and Mehemet Ali, pasha of Egypt, Damascus was taken by the troops of the latter, to whom it was formally ceded by the sultan by the peace of 1833. The Pashalik of Damascus extends from north to south, from Hamah on the Orontes down to the deserts of Arabia Petræa, south-east of the Dead Sea, a length of about four degrees of latitude; and it comprehends the country of Haouran, and the other districts on the east side of the Jordan and the Dead Sea, besides the greater part of Judæa west of the Jordan, including Jerusalem and Nablous. To the east it is bounded by deserts, which divide it from the valley of the Euphrates, to the north by the Pashalik of Aleppo, and to the west by the Pashalik of Acre.

The view of Damascus from the neighbouring mountain of Saleyeh, an offset of the Antilibanus to the north-west of the city, is very impressive; it comprises the town, with its numerous domes and minarets, the extensive woods, orchards, and gardens with which it is surrounded, clothed in perpetual verdure of various hues, and beyond it the vast level plain stretching to the east farther than the eye can reach, and bounded to the south-east by the distant mountains of Haouran. The river Barrady and other streams descending from the mountains furnish the city and the plain of Damascus with a constant supply of water, which is distributed into numerous canals for irrigation, and is the main cause of the extraordinary fertility of the country. The town is about six miles in circumference, is surrounded by old brick walls falling to ruin in several places, and is said to contain, according to Buckingham and Richardson, about 150,000 inhabitants; but according to others above 200,000, of whom 12,000 are Christians, and about as many Jews. The rest are Mohammedan Syrians, Arabs, and Turks. The native Mohammedans have long had the reputation of being the most fanatical and intolerant in Turkey; but Dr. Richardson's account of them, and the reception which he and the rest of Lord Belmore's party met with, does not confirm this bad report of the Damascenes. (Richardson's *Travels along the Mediterranean and parts adjacent, in company with the Earl of Belmore, in* 1816-18.)

Seetzen, who visited Damascus in 1806, gave also rather a favourable account of the inhabitants. There is a Franciscan convent long established in the city, and the Greek patriarch of the church of Antioch usually resides there. When Dr. Richardson visited Damascus, Lord and Lady Belmore lodged at the French consul's, who appeared to live in perfect comfort and security in the midst of this fanatical population. A frightful insurrection however took place some years after, ostensibly on the news of an English consul coming to reside in the city, but the real source of the tumult appears to have been a long-brooding discontent at the weak and oppressive rule of the Porte and its pashas. Since that time, the pasha of Egypt and his son Ibrahim have enforced strict order and rational tolerance in Damascus, and the English consul-general and English merchants, in their Frank costume, live in and walk about the town in perfect safety. (Dr. Hogg, *Visit to Jerusalem, Alexandria, and Damascus*, 2 vols. 8vo., 1835; Michaud et Poujoulat, *Correspondance d'Orient*, 1833-35.) M. Poujoulat himself, who was much alarmed on entering the gates at hearing some fellow proposing to burn him as a Frank, yet honestly says, 'I could cite evidence greatly in favour of the Damascene Mussulmans. A Greek Catholic, who has had commercial relations with them for years, told me that he never had occasion to complain of them. I myself have frequently met Mussulmans in Christian houses, who treated me with great kindness. I cannot speak of the lower orders and the population of the suburbs, who probably resemble the same classes in most great cities.' The same writer gives the following statistical list:—'They reckon at Damascus 129 tanners' shops, 22 establishments for printing stuffs, 75 dyers of stuffs, 120 dyers of silk, 34 houses of silk-winders, 748 merchants of damask cloth, 211 grocers, 68 tobacco manufacturers, 72 saddlers, 11 tent merchants, 47 coppersmiths, 50 ironmongers, 54 farriers, 70 fur merchants, 96 lacemen, 24 corn-merchants, 148 bakers, 58 millers, 123 coffeehouses, 32 confectioners, 59 public baths, 129 butchers, 71 tailors, 43 shops for pipes, 6 watchmakers, 200 haberdashers' stores, 4 glass-manufactories, 19 armourers, 4 soap factories, 143 weavers, and more than 400 public cooks.' The manufacture of Damascus blades, once so famous, has declined long since: but good sabres are still made. Saddles and bridles, both rich and highly finished; fine cabinet-work, inlaid with ivory and mother-of-pearl, and rich jewellery, are among the articles of Damascene industry. 'The shopkeepers of Damascus,' says Dr. Richardson, 'are generally clean and well-dressed, very comfortable in their appearance, and extremely civil to strangers. The bazaars are better lighted, and have a more elegant appearance than those of Cairo or Constantinople. Every class of commodities has its own street or bazaar: in one they sell nothing but shoes, another is occupied by the goldsmiths,' &c. The town is well supplied with ice; and ice-water, mixed with the juice of figs or currants, is sold and drank in profusion. The best coffeehouses of Damascus are situated in the skirts of the town, on the edge of that branch of the river Barrady which supplies the gardens; they are built of wood, and are cool and well shaded from the sun, which is their chief attraction. The streets are narrow, and many of them have a gloomy dilapidated appearance, being lined by dead brick-walls, with small mean-looking doors here and there, which open into the courts of the respective houses, which are not seen from the streets. Many of these houses are splendid in their interior, the courts being paved with marble and refreshed by fountains, with arcades and divans around. There are no carriages at Damascus, and but few carts; camels, horses, mules, and donkeys constituting the means of carriage or conveyance. The great khan is a sumptuous building, the masonry being formed of alternate layers of

: and white marble, like the Florence cathedral. The
ous square court within has a handsome fountain in
aiddle, and is surrounded by a fine arcade of pointed
s, enriched with mouldings. On the ground-floor are
ntrances to chambers and magazines, and a staircase
gallery lead to another series of apartments above. The
ipal mosque is also a fine building: it was originally a
stian temple of the Corinthian order, said to have been
by the Emperor Heraclius. There is also an exten-
itadel.

root is considered as the port of Damascus. The ex-
from Damascus are chiefly raw silk, galls, madder,
, opium, and dried fruit; but Damascus is also a great
of depôt and market of goods both from India and
Europe. The great Hadji caravan goes every year
Damascus to Mecca. Other caravans proceed to
o, to Hit on the Euphrates, and thence to Bagdad.
Damascus to Hit is about eleven caravan days.

[Coin of Damascus. Imperial Greek.]

British Museum. Actual size. Copper. Weight, 217½ grains.

MASK, a description of woven cloths composed both
k and of silk, which are believed to have been origi-
brought from Damascus. Linen damask is used for
loths and napkins. Until the last half century the
of this kind used in England were imported from
my, but the manufacture has since that time been
sfully carried on both in Scotland and in Ireland.
k cloths are of thick texture but fine in quality, and
aving of them puts into requisition all the skill of the
r for the production of the elaborate patterns which
ear. Some of these patterns require upwards of
hanges of the draw-loom for their completion, the
d of performing which could not be explained with-
oing into the detail of the art of weaving. The
g of silk damask was introduced into England by
lemish weavers, who fled hither from the persecu-
of the duke of Alva in 1567. For a long time silk
k dresses were used on all occasions of ceremony by
of rank and by wealthy commoners, but they were
commonly worn. They were wrought with a great
y of colours, and if the patterns did not exhibit much
they were sufficiently showy: from the quantity of
hich they contained they were also very costly. The
k employed at the present day for curtains and the
rticles of household furniture is made of a mixture
with flax, cotton, or wool; the warp is of the more
material.

'MASUS I., the son of a presbyter, was elected bishop
me after the death of Liberius, A.D. 366. A party
the clergy elected the deacon Ursinus in opposition
masus, and the people, who had then a share in the
ns, being equally divided, the two parties fought in
reets and in the churches for several days. Ammia-
Marcellinus (xxvii. 3), who gives an account of these
ers, states that 137 bodies of the slain were found in
ay in the basilica of Sicininus alone. The same
draws a sad picture of the corruption of the clergy of
in that age, of their cupidity and luxury, which he
sts with the modest bearing of some of the provincial
. In the Theodosian Code (b. xx.) there is an impe-
nstitution, which was issued about that time for the
discipline of the clergy, in which they are forbidden
ng legacies from widows and minors, frequenting the
of matrons, cohabiting with women under the pre-
of religion, &c. Damasus being acknowledged by
hops of Italy, was confirmed by the Emperor Valen-
who sent Ursinus into exile. The party of the latter
er kept up disturbances in Italy for several years.
s himself returned to Italy. A Jew having brought
ge of adultery against Damasus, the affair was tried
uncil of bishops at Rome in 378, and Damasus was
ed. The Emperor Gratian being appealed to, sent the Jew into exile, as well as Ursinus and several of his party.

Damasus held several councils for the purpose of condemning heretics, and especially the Arians, the Apollinarians, and the Luciferians. He also was requested by the Eastern churches to decide disputes which had arisen among them, particularly on the subject of the election of Flavianus to the see of Antioch. Among the eastern bishops who repaired to Rome on that occasion was Epiphanius, bishop of Cyprus, accompanied by St. Jerome, who had acquired, during his residence in Syria and Palestine, a great reputation for theological learning. Jerome became intimate with Damasus, and is said to have acted as his secretary. It was not until the death of Damasus, A.D. 384, that Jerome finally returned to the East, where he died.

There are a few letters of Damasus which have been preserved by Theodoretus and St. Jerome. Other letters and verses, as well as a liber pontificalis, which have been published under his name, are now considered apocryphal. The church of S. Lorenzo in Damaso at Rome has derived its name from him, as he is believed to have been the founder of a church on the spot where the present structure stands, and where he was buried. Damasus was one of the most learned and influential among the earlier bishops of Rome. He was succeeded by Syricius.

DAMASUS II., Poppo, bishop of Brixen, was elected pope A.D. 1048, in the room of Benedict IX., who had been deposed by the council of Sutri for his misconduct. He died, twenty-three days after his election, at Palestrina, and was succeeded by Leo IX.

DAMAUN, a district of Afghanistan, formerly subject to the sovereign of Cabul, and now divided among many small uncivilized tribes, who are frequently engaged in quarrels with each other. Damaun extends along the west bank of the Indus between 31° and 33° N. lat. and includes the tract of country comprehended between the Salt range, the Soliman range, the Indus, and Sungur in Upper Sinde. This district consists almost wholly of plains, and great part of the soil is sandy and sterile, the natural unproductiveness being suffered to remain without any attempt to remedy it, on account of the insecure condition of the inhabitants. The land in the immediate vicinity of the villages is, however, cultivated and rendered productive. The only trees to be found in the district are some dates which have been planted in these spots. The country is very thinly populated. Dera-Ishmael-Khan, the capital of the district, stands on the west bank of the Indus, in 31° 50′ N. lat., and 70° 33′ E. long., and is enclosed by a wall of unburnt bricks about a mile and a half in circumference. The greater part of the inhabitants are Baloochees; the remainder are composed of Hindus, Afghans, and Juts. The country people of Damaun are chiefly Juts and Baloochees; they are dark-complexioned, and a meagre ill-formed race. The banks of the river are covered in many parts with thick jungle, which is the resort of numerous wild animals. The climate is subject to great changes. In the winter, frost is very common in the night and morning, when the thermometer is often some degrees below the freezing point. The summer is insupportably hot both by day and by night, and it is said that the inhabitants are obliged to wet their clothes and thus produce an artificial coolness in order to procure any sleep.

DAMIE'NS, ROBERT FRANÇOIS, was born in 1715, in a village of Artois, where his father had a small farm. He enlisted in the army, which he left at the peace, and went to Paris, where he engaged as a menial, first in the College of the Jesuits, and afterwards in several families: he was repeatedly turned out of his situation on account of misconduct. While he was unemployed he used to attend the great hall of the Palace of Justice, which was then the rendezvous of those who were styled Jansenists. At that time France was distracted by the long quarrel concerning the bull Unigenitus. [Clement XI.] The parliament of Paris disapproved of the bull, although it had been forced by the court to register it. Several of the parish clergy expressed a similar opinion, and were on that account suspended from their functions by their bishops, who were in general favourable to the prerogatives of the court of Rome. The clergymen thus laid under interdict appealed to the parliament, which returned a decision favourable to them. Upon this the court and the bishops attacked the parliament, several of whose members were imprisoned by lettres de cachet. The supposed miracles of the Abbé Paris, brother of a councillor of parliament, and a sturdy opposer of the bull, excited the minds of the people, and created a sect of fanatics, called 'convulsionnaires,' or 'shakers.' The archbishop of Paris refused the sacraments, not only to the shakers, but to all those suspected of Jansenism, that is to say, opposed to the bull. The parliament issued arrêts to oblige the local clergy to administer the sacraments. The king cashiered these arrêts. The outcry now became general against the archbishop, the ministers, and the king; France was threatened with a schism and a war of religion. Louis XV. had then for his mistress Madame de Pompadour, who was generally disliked on account of her haughtiness and prodigality. All these complaints seem to have made a deep though confused impression on the excitable but ignorant mind of Damiens. Gautier, a servant of one of the councillors of parliament, acknowledged that he had heard him speak very violently in defence of the parliament, and against the archbishop of Paris. It would seem that Damiens was particularly irritated at the archbishop refusing the sacraments to so many people, and that he fancied that by killing or at least wounding the king he would effect a change in the system of the government, and put down the archbishop and his party. However this may be, Damiens went to Versailles; and on the 5th of January, 1757, about five in the afternoon, as Louis was stepping into his carriage, Damiens, who had made his way unobserved among the attendants, stabbed him on the right side with a knife. The wound was slight, and the king, after a few days, recovered. It is worthy of remark, that the knife had two blades, of which Damiens used the shorter, which seems to confirm what he stated on his interrogatory, that he did not intend to kill the king, but only to frighten him and give him a warning. He did not attempt to run away, but was secured, examined, and put to the torture. He was afterwards removed to Paris, and committed for trial before the grande chambre of the parliament, to which the king wrote, or was made to write by his ministers, a letter, in which he demanded 'a signal vengeance.' Damiens was condemned as a regicide to be broken alive by four horses. The sentence was executed on the 28th of March, 1757, on the Place de Grève. Before being put to death, he was tortured for one hour and a half on the place of execution with red-hot pincers, molten lead, and other cruel contrivances. All the windows and roofs of the houses around were filled with spectators, men and women, among whom were many ladies of rank. It was altogether one of the most disgraceful exhibitions that ever took place in a civilized country.

Damiens acknowledged no accomplices, and it does not appear that he had any. His crime was the act of a weak and disordered mind. His trial was published by Le Breton, with a notice of his life, 4to. 1757. (See also *Histoire du Parlement de Paris*, 8vo. 1769.)

DAMIETTA or DAMIAT, a town of Lower Egypt, on the right or east bank of one of the principal branches of the Nile, and about six miles above its mouth, the antient Phatniticum Ostium. Old Damietta, or Thamiatis as it was called under the Byzantine emperors, stood about four miles farther north, and near the sea, which however has now receded from it: its scanty remains are seen near the village of Esbé, about two miles from the shore. Thamiatis was a small town in the time of Stephanus Byzantinus, but it increased gradually from the decay of Pelusium, and drew to itself the trade of the latter. It was taken by the Saracens, who surrounded it with strong walls and made it one of the most commercial and wealthy towns of Egypt. Roger, king of Sicily, took it, but it was retaken by Salaheddin; it was taken again by the crusaders under John of Brienne, but they lost it soon after. In 1249 Louis IX. landed with a large armament, and took Thamiatis almost without resistance; but having advanced inland, he was defeated and taken prisoner at Mansoura. The sultans of Egypt, in order to prevent further attacks in that quarter, choked up the mouth of the Nile by sinking large barges filled with stones, and thus formed a dangerous bar, which prevents large vessels from entering the river. They also razed Thamiatis to the ground, and removed the inhabitants farther inland. From these occurrences arose New Damietta.

The town of Damietta is larger than Rosetta: its population amounts to about 20,000, although several travellers have reckoned it much higher. It has some fine mosques, several bazars, and baths adorned with marble; many of the houses have pavilions or belvederes on the terraces for enjoying the cool breeze. It carries on a considerable trade both with Europe and the Levant. The merchant-ships remain at anchor outside of the bar, and load and unload by means of djermes or boats. Rice is one of the chief articles of exportation. At Damietta and in the neighbourhood are manufactures of fine cotton cloth, towels, &c. The country around is a complete garden, irrigated by numerous canals, and planted with all kinds of fruit-trees, such as orange, lemon, fig, tamarind, pomegranate, &c. The great marshy lake Menzaleh begins two or three miles east of Damietta, and extends about 40 miles in length to near antient Pelusium. It communicates with the sea by several mouths, and with the Damietta branch of the Nile by canals. The fishery of lake Menzaleh is very abundant; various kinds of water-fowl are also caught upon it.

Damietta is the head town of a prefectship or province, which extends eastwards along the banks of lake Menzaleh as far as El Arish on the borders of the Syrian desert.

DAMP, CHOKE. [MINING.]

DAMPIER, WILLIAM, was born in 1652, of a Somersetshire family; he went early to sea, served in the war against the Dutch, and afterwards became overseer of a plantation in Jamaica. He thence went to the Bay of Campeachy with other log-wood cutters, and remained there several years. He kept a journal of his adventures and observations on that coast, which was afterwards published; 'Voyages to the Bay of Campeachy,' London, 1729, with a 'Treatise on Winds and Tides:' Dampier, besides being a bold seaman, had also studied navigation as a science. In 1679 he joined a party of buccaneers, with whom he crossed the Isthmus of Darien, and having embarked in canoes and other small craft on the Pacific ocean, they captured several Spanish vessels, in which they cruised along the coast of Spanish America, waging a war of extermination both by sea and land against the subjects of Spain. [BUCCANEERS.] In 1684 Dampier sailed again from Virginia with another expedition, which doubled Cape Horn and cruised along the coasts of Chile, Peru, and Mexico, making depredations upon the Spaniards. From the coast of Mexico they steered for the East Indies, touched at New Holland, and after several adventures in the Indian Seas, Dampier went on shore at Bencoolen, from whence he found his way back to England in 1691, when he published his 'Voyage round the World,' a most interesting account, and which attracted considerable attention. His abilities becoming known, he was appointed commander of a sloop of war in the king's service, and was sent on a voyage of discovery to the South Seas. Dampier explored the west and north-west coasts of New Holland, surveyed Shark's Bay, and gave his name to a small archipelago east of North-West Cape. He also explored the coasts of New Guinea, New Britain, and New Ireland, and gave his name to the straits which separate the two former; on his homeward voyage he was wrecked on the Isle of Ascension. He at last returned to England in 1701, when he published the account of this voyage. In 1707 he published a 'Vindication of his Voyage to the South Seas in the ship St. George,' with which he had sailed from Virginia in his former marauding expedition. Dampier went to sea again till 1711, but the particulars of the latter part of his life are little known. He ranks among the most enterprising navigators of England. He was acquainted with botany, and was possessed of considerable information and general knowledge. His style of narrative is vivid, and bears the marks of truth. His voyages were published together in 3 vols. 8vo., London, 1697—1709.

DAMSON, or DAMASCENE (from Damascus), a race of plums cultivated in this country for the sake of their hardiness and prolific habits. They are a mere form of the domestic plum, from which there are no certain characters to distinguish them, except the abundance of their late oval fruit, and the property they possess of propagating by suckers. All the varieties are used for kitchen purposes principally, and are generally confined to the gardens of cottages or farm-houses, where the quantity of produce is more valued than its quality. Much the finest variety of this sort of plum is that called the Shropshire damson, which is extensively multiplied in the nurseries by grafting.

DANCING. [BALLET.]

DANCOURT, FLORENT CARTON, a popular French dramatist and actor of the times of Louis XIV., was born in 1661, and studied at Paris under the Jesuit Larue. His preceptor, observing that his talents were far from ordinary, wished him to devote himself to the religious profession, but Dancourt preferred the law, and acquired some reputation as an advocate. He shortly however fell in love with the daughter of the comedian, La Thorilière, an attachment which induced him to quit his legal studies and appear on the stage. Having married Mlle. La Thorilière, he became one of the king's comedians, and even one of his greatest favourites. An anecdote is told of his being saved from falling by Louis, who caught his shoulder; and in the days when this story was current, a king who under any circumstances put forth his hand towards a subject was reckoned full as condescending as one of the gods of antiquity who came down to aid some favourite hero. After remaining thirty-eight years in the service of the king, he retired to his estate at Berri, where he passed the remainder of his life in devotional exercises, and wrote some psalms and a sacred tragedy, which is not extant. He died in 1726, having superintended the erection of his own tomb, leaving two daughters, who were both actresses, and both married into families of distinction.

The works of this author occupy six volumes: they were most of them successful at the time they were written. The greater number of them are farces, the scene of which lies mostly in low life. There is a drollery about them and a smartness in the dialogue which will always render them amusing, but the interest they possessed at the time of their appearance is now lost. Dancourt being an unlearned man, sought for subjects among incidents which he himself witnessed, and which were often well known to the public. An author whose chief excellence lies in happily delineating events of a local interest may be sure of popularity, but equally sure that his popularity will be but transient.

DANDELION, a corruption of the French name 'dent de lion,' or lion's tooth, a common weed, with a tapering milky perennial root, resembling that of succory: like the latter, it is sometimes cut into pieces, roasted, and employed to adulterate coffee. Its leaves have also been forced in the winter as salad; but its excessive bitterness prevents its being much employed in this way. It is the Leontodon Taraxacum of botanists.

DA'NDOLO, ENRICO, a patrician of Venice, who was elected doge in 1192 at a very advanced age. In the year 1201 the French crusaders applied to the Venetian senate for assistance in their expedition to Palestine. Dandolo warmly supported their petition, lent them money and provisions and ships, and stipulated in return that they should assist him in conquering the town of Zara for the republic. Dandolo, though aged and nearly blind, embarked in the admiral's ship. The crusaders took Zara, and afterwards, being invited by Alexius, son of Isaac Angelus, who had been driven from the throne of Constantinople, the Venetians and crusaders, forgetting the Holy Land, sailed for Constantinople, attacked it and took it by storm, A.D. 1204. Old Dandolo, then nearly 90 years of age, was the soul of this expedition; he was one of the first to land, on the first attack in 1203, and to take possession of part of the ramparts, on which he planted the standard of St. Mark. For other particulars of this expedition and its results, see BALDWIN I., Emperor of Constantinople. Dandolo refused the imperial crown, which the crusaders had offered to him, but accepted the title of Despot of Romania. He died shortly after, in 1205, and was buried in the church of Santa Sophia. Dandolo is one of those who contributed most to the establishment of the maritime power of Venice. There have been other senators and doges of the same name.

DANEGELD, sometimes called simply the GELD, was a tax originally imposed in order to purchase peace with the Danes; and means Danish payment. Henry says (*Hist. of Brit.*, edit. 8vo., Lond., 1805, vol. iii., p. 366,) that when the invasions of the Danes were frequent and formidable, it became a custom sometimes to bribe them with a sum of money to desist from their depredations and leave the country; and at other times to keep a considerable body of troops in constant pay to defend the coasts against these dangerous enemies. The ordinary revenues of the crown were quite inadequate to the expense of these expedients: and therefore it was found necessary, with the consent of the wittenagemot, to impose a tax first of one Saxon shilling, and afterwards of two or more shillings, on every hide of land in the kingdom. As there were 243,600 hides of land in England, this tax, at one shilling on each hide, raised 12,180 Saxon pounds, equal in quantity of silver to about 36,540*l.* sterling, and in efficacy to more than 360,000*l.* of our money at present. According to the Saxon Chronicle (edit. Gibs., p. 116), this tax was first imposed A.D. 991. It was soon after raised to two and at last to seven shillings on every hide of land, and continued to be levied long after the original occasion of imposing it had ceased.

Whilst the invasions of the Danes were almost annual, our kings derived little profit from this tax, which was all expended in bribing or fighting these invaders; but after the accession of the Danish princes to the throne of England, it became one of the chief branches of the royal revenue. This tax was raised so high, and collected with so much severity by King Canute, A.D. 1018, that it amounted to the prodigious sum of 71,000*l.*, beside 11,000*l.* paid by the city of London. (*Chron. Sax.*, ut supr., p. 151.)

Edward the Confessor, who succeeded Hardicnut in 1042, and put a stop to all future payments from the English to the Danes, as well tributary as stipendiary, continued nevertheless to collect danegeld from the subject until the year 1051, when, as Ingulphus and other authors say, he absolutely repealed it. It was revived at an early period of William the Conqueror's reign, and, according to Webb, in his 'Short Account of Danegeld,' 4to., Lond., 1756, p. 2, continued to be collected as low as 21 Hen. II., if not later. In the Domesday Survey, danegeld occurs but once by its own name, tom. i., fol. 336 b., under Stamford, in Lincolnshire. It is mentioned as one of the *Jura regalia* in the Laws of Henry I., chap. 10. Stephen, at his coronation, took an oath that he would remit this tax. (Compare Spelman's and Du Cange's *Glossaries*, v. 'Danigeldum.')

DANES is the general appellation given to the Scandinavian tribes which in the ninth and tenth centuries became so formidable by their predatory expeditions, and invaded and occupied a great part of Britain and France. The early history of the Scandinavian nations is involved in great obscurity, though Danish and Swedish chroniclers gravely deduce their genealogy from Japhet and his son Gog, and relate their early migration from Asia. But coming to more historical times, there is a poem on the exploits of the Danes in the third and fourth centuries, which refers to their wars among themselves, and in which the Danes, properly so called, or Western Danes, appear as the inhabitants of Jutia, who are also called Scyldingi; while the Sveones (perhaps the same as the Suiones), mentioned by Tacitus (*German.*) as living near the shores of the Baltic, are called also Eastern Danes, or inhabitants of part of the country now called Sweden. Next to these are mentioned the Geata, or Goths: and in the islands of the Baltic, the Sæ Geata, or Sea Goths, called also Scyldingi. We find also mention of the Northern Danes, probably the Norwegians. (*De Danorum Rebus gestis Seculis III. et IV. Poema Danicum dialecto Anglo-Saxonica ex bibliotheca Cottoniana Musæi Britannici*, edited by G. J. Thorkelin, 4to. 1815.) The common language of all these people was the Norse or Dönsk Tunga, which is still spoken in Iceland, and of which the Anglo-Saxon was a dialect. (P. Vidalini, *De Appellatione Linguæ Septentrionalis*, 1775.)

Scandinavian migrations had taken place to North Britain in very remote times: and it appears probable that some of the tribes which inhabited Caledonia in the Roman period had come originally from that quarter. The Jutes and Angli, who, with the Saxons, conquered Britain, came from Jutia, the country of the Western Danes. But after the Saxon conquest, the connexion between the migrated tribes and the Danes who had remained in Scandinavia became obliterated, until the end of the eighth century, when the Danes began to make war upon their old kinsmen with all the fierceness of inveterate enemies. Their predatory descents on the coast of Britain became formidable during the reign of Egbert; and under his successors the Danes obtained possession of great part of the island, until Alfred the Great defeated them, and obliged the Danish chieftains to submit. [ALFRED.] The eastern part of England retained long after the name of Danelagh, or Danish Law, and the population was in great measure of Danish stock, especially to the north of the Humber. After the death of Alfred fresh incursions took place, until at the beginning of the eleventh century Canuto, or Knut, having established himself as sovereign of all the Scandinavian nations, added Britain also by conquest to his sceptre. [CANUTE.] After Canuto's death his successors Harold and Hardicnut held the sway of Britain for a few years longer, after which the line of the Saxon kings was restored in the person of Edward the Confessor. The Norman conquest, which followed close upon the death of the latter, put an end to the Danish invasions on the coasts of Britain. But the Normans themselves were originally of Danish stock in the general sense of the name, having settled in North France under Rollo the Ganger in Alfred's time; and those Norman pilgrims and knights who conquered the kingdoms of Sicily and Apulia in the eleventh century were likewise their progeny.

DANIEL, one of the four greater prophets (Isaiah, Jeremiah, Ezekiel, Daniel). From the first chapter of the book of this prophet we learn that he was of the tribe of Judah; that, when a child, he was carried captive to Babylon by Nebuchadnezzar, in the third year of the reign of Jehoiakim, king of Judah, 606 B.C., and that he was one of the 'children (ver. 4) in whom was no blemish, but well-favoured, and skilful in all wisdom, and cunning in knowledge, and understanding science,' who were chosen by the master of the king of Babylon's eunuchs to be taught 'the learning and the tongue of the Chaldeans,' and to stand before the king. It appears to have been required of these children to have countenances fair and fat in flesh — qualities in which Daniel, otherwise Belteshazzar, and his three companions, Shadrach, Meshach, and Abednego excelled, by adopting a diet of pulse and water instead of the king's meat and wine supplied to them for this purpose (10, 15). 'Daniel had understanding in all visions and dreams; and in all matters of wisdom and understanding the king found him and his three companions ten times better than all the magicians and astrologers that were in all his realm' 17, 20). In reward for the interpretation of a dream related in ch. 2, 'King Nebuchadnezzar not only gave Daniel many valuable gifts, and made him ruler over the whole province of Babylon, and chief of the governors over all the wise men of Babylon, but he fell upon his face and worshipped him, and commanded an oblation and sweet odours to be offered unto him' (46, 48). Daniel's Chaldæan name of Belteshazzar was that of a Babylonian deity, the god of Nebuchadnezzar; and the prophet is repeatedly said to have possessed the spirit of the holy gods, and to have been made master of the magicians, astrologers, Chaldæans, and soothsayers (iv., 8, 9; v., 11). For interpreting the mysterious writing on the wall, king Belshazzar clothed him in scarlet, put a chain of gold about his neck, and made him third ruler in the kingdom. Daniel also prospered in the reign of the Median monarch Darius (probably the Cyaxares of the Greek historians), who appointed him the first of three presidents over 120 princes, whom he set over the whole kingdom (vi., 2). Having escaped unhurt from the lions' den into which he was thrown by Darius, he continued to prosper in the reign of Cyrus the Persian (28). He did not return to Judæa on the termination of the captivity, but remained with the large portion of his countrymen who continued at Babylon, where he is generally supposed to have died. Some, however, state that he died at Susa, on the Eulæus. He was contemporary with Ezekiel (xiv. 14, 20, and xxviii. 3). Among the Rabbis it is generally maintained that Daniel was not a true prophet; that he did not dwell in the Holy Land, out of which they say the spirit of prophecy does not reside; that he spent his life, not as the other Jewish prophets, in solitude, poverty, and abstinence, but amid the grandeur, pomp, and luxury of a royal palace; that he was a eunuch (2 Kings, xx. 18), one of a class who are excluded from the congregation of the Lord (Deut. xxiii. 1). Some place his writings among the mere Hagiographia, as having less authority than the canonical books. They account for the fact of his not being mentioned when his three companions were cast into the furnace, by saying that he was absent from Babylon on an expedition to Egypt, for the purpose of stealing hogs (Calmet's *Dict. of the Bible*); and they object to his prophecies that they all relate to dreams and visions, which they consider the most imperfect modes of revelation. However, it is said by Josephus (*Ant. Jud.* l. x. c. 12), that Daniel was a great and true prophet, who was favoured with communications from Jehovah: he says also that Daniel built a famous palace at Susa or Ecbatana. Dr. Adam Clarke and others think that Zoroaster was Daniel. The twelve chapters of the canonical book of Daniel are partly in the Hebrew and partly in the Chaldaic language. The uncanonical or apocryphal books attributed to this prophet, consisting of the stories of Susannah and Bel and the Dragon, and the Song of the Three Children, are extant only in the Greek of Theodotian, which is adopted in all the Greek churches of the east, the version of the Septuagint being lost. The following are the principal prophetical subjects of the canonical book of Daniel. Chapter 2 contains the account of Nebuchadnezzar's dream of the great image of gold, silver, brass, iron, and clay, with Daniel's interpretation. The stone which became a great mountain is considered as prophetic of the Messiah. Chapter 4 relates the same monarch's dream of the great tree, representing himself, as interpreted by Daniel, and which was speedily fulfilled. In chapter 5 is recounted Daniel's interpretation of the writing on the wall at the feast of Belshazzar. Chapter 7 contains the prophet's description and interpretation of his own dream of the four great beasts. The commentators state that the four kingdoms of the earth designed by these four beasts were the Babylonian, the Medo-Persian, the Macedo-Grecian, and the Roman. The ten horns of the fourth beast are said to be ten kingdoms rising out of the Roman empire; but what particular kingdoms are meant appears rather difficult to determine, if we may judge from the conflicting opinions of different writers. The Rev. Hartwell Horne, in his 'Introduction to the Bible,' has tabulated the theories of some of the most eminent commentators, which exhibit scarcely a single instance of agreement in any particular. Thus, in explaining the meaning of the first horn, Machiavel applies it to the Ostrogoths, Dr. Mede to the Britons, Drs. Lloyd and Hales to the Huns, Sir Isaac Newton to the Vandals, and Bishop Newton to the senate of Rome. This dream has always been much insisted on by Protestant writers as a prophecy relating to the destinies of the Church of Rome. Daniel's vision of the ram and the he-goat described in Chapter 8 is considered to signify the destruction of the Medo-Persian empire by the Macedonians, who were antiently called Ægadæ, or Ægeatæ, that is, the goat-people. The prophecy of the seventy weeks, communicated to Daniel by the angel called the man Gabriel in chapter 9, is regarded by all Christians as a striking prediction of the advent of Jesus as the Messiah. Sir Isaac Newton, in his Commentary on Daniel, declares it to be the foundation of the Christian religion. The weeks are understood as being prophetic weeks, consisting each of seven years. (*Leviticus*, xxv. 8.) No scriptural authority is to be found for this interpretation (Le Clerc, *Biblioth.* tom. xv. p. 201); but an instance of this mode of reckoning occurs in Macrobius, *Somn. Scip.*, l. i. c. 6. In the 25th and 26th verses it is said that from the first year of the reign of Darius (ver. 1, 3, 23) unto the Messiah the prince would be 69 weeks, or 483 years, and that then Messiah would be cut off, which disagrees with the best chronologists, who make the first year of Darius 538 B.C. (A. Clarke's *Bib.*) The chronological difficulties of this important prophecy have occasioned a great variety of interpretations, and exercised the pens of the most learned of the fathers and of modern divines. (*Improved Version of Daniel*, by the Rev. Thos. Wintle, 8vo. 1836; Prideaux's *Connect.* vol. i. p. 306; Vossius, *De 70 Hebdomad. Dan.*, p. 183). In the 10th and 11th chapters other visions are described which relate chiefly to the conquests and revolutions of several Asiatic nations. The prophecy in the 12th and last chapter extends to the end of time, and speaks of the resurrection and the day of judgment. In the time of Jerome some few Rabbis admitted the story of Susannah as canonical, while others rejected it as such; and Josephus, in speaking of Daniel, says nothing either of Susannah or of Bel and the Dragon. (Hieronymus, *In Dan.*) A learned dissertation on these books is given by Eichhorn in his 'Einleitung in die Apokriphishen Scriften,' p. 419. Porphyry, in the twelfth of his fifteen books against the Christians, impugns the genuineness and authority of the prophecies of Daniel, contending that they are falsely ascribed to him, and that they are really historical, and were written after the occurrence of the events to which they relate. Dr. N. Lardner has collected some of these objections, and accompanied m with the replies of Jerome (Lardner's *Works*, vol. viii. 185-204). Bishop Chandler, in his 'Vindication of the ence of Christianity,' and Dr. Samuel Chandler, in a ndication of the Prophecies of Daniel,' have elaborately ussed the subject of the genuineness and canonical au- ity of this prophetical book. It is remarked by Mr. ne, that 'Of all the old prophets Daniel is the easiest e understood;' and that 'he writes more like an histo- than a prophet.' Grotius, Le Clerc, and several other ned critics, have maintained that all the prophecies of iel relate to and terminated in the persecution of the s under Antiochus Epiphanes, in the age succeeding of the prophet. In Mr. Horne's 'Introduction,' vol. 792-3, an account is given of the principal commen- s on Daniel, as Sir Isaac and Bishop Newton, Drs. er, Frere, Hales, &c., and of the numerous disqui- ns on the particular prophecies, especially that of the nty weeks. The commentary of Sir Isaac Newton is ed by the divines who have written on Daniel in very rent lights; some have bestowed on it the highest com- dation, and others have treated it as of little or no e. Numerous sermons on texts, and commentaries on book of Daniel, are named in the 'Bibliotheca Britan- ' by Watts. (See Eichhorn's *Einleitung in das Alte ament*, vol. iii. p. 382; *Preface to and Comment. on* . in Dr. Adam Clarke's *Bible*, especially on chaps. ii. and ix.; Prideaux's *Connect.*, vol. ii. p. 380; *Daniel's nty Weeks Interpreted by a Layman*, 8vo. 1836.)

ANIEL, SAMUEL, was born in Somersetshire, A.D. , and educated at Magdalen Hall, Oxford, which, how- , he left without a degree, 'his geny being,' according nthony à Wood, 'more prone to easier and smoother ects than in pecking and hewing at logic.' He became r to Lady Anne Clifford, subsequently Countess of broke, and was afterwards groom of the privy chamber nne, queen of James I. He is said to have been poet- eat on Spenser's death; but it is more likely that he only one of many employed about the court in writing ques and birth-day odes, and in this capacity he seems ave stirred the wrath of Ben Jonson, who probably held in the light of a rival. Towards the end of his life he ed into Somersetshire, where he died in 1619. His is preserved in the Prerogative-court at Canterbury, in Rymer's Fœdera exists a patent granting him the sive printing of his 'History of England' for the term n years.

s poems consist of an Heroic, in six books, on the s of York and Lancaster: it contains many stanzas in est style, which unite such grace of language with tness of thought as to render them much more intel- le at present than those of his contemporary Spenser. niel partly conformed to the fashion then prevailing, h consisted in a mode of expression termed euphuism, ll known by the specimen given in 'Kenilworth;' but rusal of his works will show that, of the numerous ized words which the revival of learning introduced our tongue, his good taste prompted him to choose, very few exceptions, those which are at present in use; is, he only admitted those which were really necessary mplete the language. The poem next in length is sophilus,' a dialogue between Musophilus and Philo- us. It is, we think, his master-piece both in thought execution; the somewhat irregular terza rima in which written seems well adapted for a union of sweetness continuity of thought. It contains an apology for ry pursuits, against the objections urged by a man of world, and might be applied with equal force at present; d the last couplet of the passage with which the poem s seems far more applicable to the nineteenth century to the sixteenth. The orthography is modernized in ollowing extract:—

> Fond man, Musophilus, that thus dost spend,
> In an ungrateful art, thy dearest days,
> Tiring thy wits, and toiling to no end,
> But to attain that idle smoke of praise;
> Now, when this busy world cannot attend
> The untimely music of neglected lays;
> Other delights than these, other desires,
> This wiser profit-seeking age requires.'

e other poems contained in the edition of 1602 are, ter from Octavia to Mark Antony, which shows to a ing extent that faculty peculiar to a true poet, which een called 'dramatic power;'* 'The Tragedy of Cleo- ,' in alternate rhymes, with chorusses on the antique model; and 'The Complaint of Rosamond,' who speaks from the infernal regions, but is little encumbered by classical imagery after the first few sentences; this poem is written in a seven-line stanza, of which the first and third, the second, fourth, and fifth, and the two last, rhyme; and contains much beautiful description as well as tender thought, introducing sensuous imagery without the least approach to indelicacy or impurity; indeed the whole character of his poems quite justifies the somewhat quaint assertion of old Fuller, that 'he carried in his Christian and surname two holy prophets, his monitors, so to qualify his raptures that he abhorred all profaneness.' Besides these poems, are 57 sonnets to Delia, several masques, odes, and epistles. His prose works are, 'A History of England, in two parts, extending to the reign of Ed. III.,' and 'An Apology for Rhyme,' which last shows a close acquaintance with the rules and niceties of his art, and contains several remarks on rhythm, interesting in illustration of the change in pronunciation which had taken place since Chaucer. It also shows, what is somewhat strange, that he considered rhyming tragedies the rule, and those in blank verse the exception; at least such seems the only meaning his words will bear: he says, 'I think a tragedy would indeed best comport with a blank verse and dispense with rhymes,' which is very unaccountable, unless we suppose him to have referred to tragedy on the antique model alone, for to attribute to him Dryden's ignorance on the subject of our early literature would be absurd. On the whole, whether as a poet or a prose writer, he has been most undeservedly neglected. In our judgment, he fully merits Southey's encomium—'Thoughtful, grateful, right-minded, and gentle-hearted, there is no poet in any language of whom it may be inferred with more certainty from his writings that he was an amiable and wise and good man.' (Southey's *British Poets;* Wood's *Athen. Oxon.;* Fuller's *Worthies;* and the *Biographia Britannica.*)

DANIE'L, LE PE'RE, a Jesuit, born at Rouen in 1649, wrote the history of France from the commencement of the monarchy, 3 vols., fol., 1713, which he dedicated to Louis XIV., who made him historiographer of the kingdom, with a pension of 2000 francs. The most valuable part of his history is that which relates to the reigns previous to Louis XI., and he is more correct with regard to facts than Mézerai. But the work altogether is very imperfect: the author says little concerning the state of society: it is a history of the kings rather than of the people. He enters very largely into religious controversies, and is very intolerant towards those whom he considers heterodox. His style also is feeble and uninteresting. The best edition of his history is that in 17 vols., 4to., Paris, 1755-60, with considerable additions by Father Griffet. The other works of Père Daniel are;—1, 'Observations critiques sur l'Histoire de France écrite par Mézerai,' in which he endeavours to throw discredit on the rival historian, who, although often inexact, is upon the whole more liberal-minded than Daniél, for which reason he lost his pension. [COLBERT.] Both their histories, however, have been superseded by the better one of Velly and Villaret, 1759. 2, 'Histoire de la Milice Française,' exhibiting the changes that had taken place in the French military establishment, and system of discipline and tactics from the beginning of the monarchy to the reign of Louis XIV.; 3, 'Le Voyage au monde de Descartes,' a kind of satire of the system of that philosopher, and several other minor works; among which the 'Entretiens de Cleandre et d'Eudoxe,' are intended as a refutation of the 'Provinciales' of Pascal. Père Daniel died 1728.

DA'NTE or DURA'NTE, ALIGHIE'RI, was born at Florence A.D. 1265. By a familiar contraction of his Christian name, Durante, he was called Dante, by which name he has become generally known. His family was noble; he was a great grandson of Cacciaguida Elisei, who married a lady of the family of Alighieri of Ferrara, and whose children assumed the arms and the name of their mother. Cacciaguida accompanied the emperor Conrad III. in his crusade, was made a knight, and died in battle in Syria A.D. 1147; (*Paradiso*, cantos 15, 16 and 17,) in which Cacciaguida is made to relate to Dante his adventures, with an interesting account of the state of Florence and the primitive manners of its citizens in his time, before the breaking out of the great feud between the Guelphs and the Guibelines. Dante's father, Aldighiero Alighieri, died while Dante was yet a child. As Dante grew up he showed great capabilities for learning, in which he was assisted by Brunetto La-

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would perhaps be better understood by the words 'power of identifi- ' by which the poet speaks naturally in any character.

tini, a celebrated scholar of the time. He became also intimate with Guido Cavalcanti, a young man of an inquisitive and philosophical turn of mind. It is asserted by some that Dante studied at Bologna, though this is not clearly ascertained; it is, however, evident from his works that he had deeply read and was imbued with all the learning of that age. By his own account he seems to have led rather a licentious life until he fell in love with Beatrice Portinari, of an illustrious family of Florence. His attachment however appears to have been purely platonic, but it served to purify his sentiments; the lady herself died about 1290 when Dante was about 25 years of age, but he continued to cherish her memory, if we are to judge from his poems, to the latest period of his life. It must have been about or a little before the time of Beatrice's death that he wrote his 'Vita Nuova,' which is a series of canzoni intermixed with prose, in which he speaks of his love in a spiritual and platonic strain, and of the change it produced in him, which was the beginning of his 'new life.'

The party of the Guelphs was at that time predominant at Florence, having some years before driven away the Guibelines with the assistance of the pope and of Charles of Anjou, king of Naples. But in the neighbouring city of Arezzo the contrary had occurred; the Guibelines, with the bishop at their head, being the stronger party, had turned the Guelphs out of the town. It may be observed that the names of these two rival factions, which in their origin designated the respective partisans of the emperors and popes, lost much of their primitive meaning as the quarrel between the church and the empire subsided by the extinction of the house of Suabia. The rivalship however between the leading families of each party continued, mutual offences were remembered, and the remembrance was bequeathed from father to son; so that Guelphs and Guibelines were ever ready to fight in every part of Italy, not for the supremacy of church or empire, but for their own municipal superiority in their respective communities; and such was the ambition of domineering that prevailed among the wealthier families, that after the Guelphs had driven the Guibelines out of town, or *vice versâ*, the leaders of the party that remained in possession of the place began to quarrel among themselves, and it not unfrequently happened that some of them courted the assistance of the emigrant rival faction against their own colleagues. This occurred among other instances at Florence in 1280, when Bonaccorso degli Adimari, one of the Guelph leaders, connected himself by marriage with the Guibeline count, Guido Novello, which led to a temporary truce between the two parties. But the Guelphs soon after began to persecute the Guibelines again. The usual fate of the losing party in such cases was exile, with confiscation of property, and in case of armed opposition to or contravention of this sentence, torture and death were freely awarded, and the houses of the obnoxious individuals were not unfrequently set on fire or razed to the ground. The Guelphs of Arezzo being driven out of their town applied to those of Florence for assistance. This led to a war between Florence and Arezzo, in which the Guibelines of the latter place were defeated at Campoldino in June, 1289, when their bishop was killed. [AREZZO.] Dante was present at this engagement, and soon after his return to Florence he married Gemma Donati, of a powerful Guelph family. He now became a candidate for civic honours and offices. The citizens of Florence were classed into three ranks:—1st, grandi, or old families, formerly feudal nobles, many of whom had still feudal estates in various parts of the country, though in the town they enjoyed by law no exclusive privilege; 2nd, popolani grassi, or substantial citizens, men who had risen by trade, and many of whom were wealthier than the nobles; 3rd, piccioli, or inferior tradespeople, artisans, &c. The two last classes, weary of disturbances created by faction, and being directed by some well-meaning men, among whom was Dino Compagni the chronicler, who is the safest guide through this part of Florentine history, had made a law in 1282 by which the citizens being classed according to their trades, the higher trades, 'arti maggiori,' chose six priori, or aldermen, one for each district of the city, who were called also 'i signori' and constituted the executive. They were renewed every two months. No one could aspire to office who had not his name inscribed on the register of one of the trades. Dante enrolled his name on the register of physicians and apothecaries, though he never exercised that profession.

The institution of the priori did not prevent
being distracted by factions as before, as those m
often availed themselves of their brief term of
favour their friends and court favour with the
citizens. To remedy this, the popular party, led
della Bella in 1293, elected a new officer, cal
faloniere di Giustizia, who was to enforce c
justice, and gave him a guard of 1000 soldiers;
excluded for ever thirty-three families of the
nobles, from political office. But a conspira
wealthy families drove away Giano della Bella a
herents in 1294, and the town again fell a prey t
Two powerful families, the Donati and the Cerc
the head of the contending parties, and affray
their respective partisans occurred repeatedly in
of Florence. Both were Guelphs, but the Cerchi
pected of a bias in favour of the Guibelines, be
were less rigorous in enforcing the penal laws
latter; and they had also for them the friends
justly expelled Giano della Bella. The pope,
VIII., favoured the Donati as being zealous
About this time the town of Pistoia was likewi
between two factions, called Bianchi and Neri,
ginated with two branches of the family of Cance
Florentines being applied to as arbitrators, seve
more violent partisans were exiled from Pistoia,
to Florence, where the Bianchi became conn
the Cerchi, and the Neri with the Donati, and
connexions the two Florentine parties assume
spective names of Bianchi and Neri. Both, a
said above, were branches of the great Guelph
predominant at Florence; but afterwards the
their reverses joined the Guibelines, with whom
been often confounded by subsequent writers. I
sary to bear these things in mind, in order to u
the history and the political sentiments of Dant
was a Guelph, and connected by marriage with t
the leaders of the Neri. But he was also connect
sonal friendship, and perhaps also by a feeling
with the Bianchi, who appear to have shown t
from the first less overbearing and violent than t
gonists, and to have been in fact the injured part
being made one of the priori in June of the
proposed and carried a law by which the chief
parties were exiled for a time out of the territo
republic. The Bianchi were sent to Sarzana, and
to Castel della Pieve. Some of the Bianchi how
after returned to Florence, and Dante was accused
connived at it, chiefly out of friendship for Gui
canti, who had suffered from the unwholesome
Sarzana, and died soon after his return. The
their agents at Rome, represented to Boniface
the Bianchi kept up a communication with the
of Arezzo, Pisa, and other places, and that if they
the preponderance in Florence, they would make
cause with the Colonna, the pope's personal
[BONIFACE VIII.] Through these suggestions,
bribes distributed by the Neri at the Roman cour
says, Boniface was induced to give his support to
and he sent them Charles de Valois, brother of
Bel, under the plausible title of peace-maker. C
tered Florence in November, 1301, followed by 1
men. Affecting impartiality at first, he let all
return to Florence, followed by the armed peasa
priori were made, all favourable to the Neri, and t
began to be openly attacked in the streets. Th
who were already an influential family among
killed one of the Bianchi, and no notice was
the murder. A general proscription of the Bi
began, connived at by the peace-maker, Charles
'People were murdered in the streets; others wer
into the houses of their enemies, where they w
the torture in order to extort money from th
houses were plundered and burnt, their daugh
carried away by force; and when some large
seen in flames, Charles used to ask, "What fire
and those around him answered him that it
wretched hovel, whilst in reality it was a rich pala
Cronica, lib. ii.) The house of Dante was onc
that were plundered. Dante was at the time
whither he had been sent by the Bianchi to cou
possible, the suggestions of their antagonists. O
the news of the proscription he hastily left Rome,

his fugitive friends at Arezzo. In January, 1302, a sentence was passed condemning him to two years' exile and a fine of 8000 florins, and in case of non-payment his property to be sequestered. By a second sentence, dated March of the same year, he and others were condemned, as barattieri, or guilty of malversation, peculation, and usury, to be burnt alive. The sentence was grounded merely on the public report of his guilt, 'fama publica,' which in this case meant the report of his enemies. This curious document was found in the archives of Florence in the last century, and has been transcribed by Tiraboschi, *Storia della Letteratura*, tom. v., part 2, cap. 2. Dante now began his wanderings, renouncing his Guelph connexions, and intent upon exciting the Guibelines of Italy against his enemies and the oppressors of his country. He appears to have repaired first to Verona, which was then ruled by the family of La Scala, powerful leaders among the Guibelines. But he soon after returned to Tuscany, where the Bianchi and Guibelines now united were gathering their strength in the neighbourhood of Arezzo.

The death of Boniface VIII. in September, 1303, inspired them with fresh hopes. Benedict XI., the new pope, a man of a mild and conciliatory spirit, sent Cardinal de Prato to endeavour to restore peace in Tuscany, but the cardinal was opposed by the ruling faction at Florence, who frightened him out of the town. Florence was left a prey to anarchy, during which a fire broke out which destroyed 1900 houses in June, 1304. The Bianchi and Guibelines thought of availing themselves of the confusion to surprise the town; and some of them actually entered one of the gates, but they were badly supported by those outside, and the attempt totally failed. Dante (*Purgatorio*, xvii.) censures the want of prudence and concord in the leaders on that occasion. He seems soon after to have left them in disgust, determined to regulate himself in future according to his own judgment. He says himself that 'it was difficult to say which of the two contending parties was most in the wrong.' (*Paradiso* vi., 102.) Dante appears to have been at Padua about 1306, and in the following year with the Malaspina, the lords of Lunigiana; he was also at times in the valleys of Casentino, and in the mountains near Arezzo; some say he went afterwards to Paris, and remained there some years; others believe that he did not go to France until after the death of Henry VII. in 1313. But his visit to Paris is very doubtful; though in canto x. of the 'Paradiso,' he speaks of a certain Sigieri, professor of that university, and designates the street in which he lived.

Dante made also an attempt to obtain the revocation of his own sentence by writing to his countrymen a pathetic letter beginning with the words—'Popule mee, quid feci tibi?' but all to no purpose. The family of Adimari, who had taken possession of his property, opposed his return. Accordingly in canto xvi. of the 'Paradiso,' he has launched a violent invective against them.

The election of Henry of Luxemburg, or Henry VII., to the crown of Germany, revived the hopes of Dante, as Henry was preparing to come to Italy in order to assert the long-neglected rights of his predecessors as kings of the Romans. The Guibeline leaders were ready to support his claims as imperial vicars, and the Guibeline cities, such as Pisa, were likewise in his favour. In order to strengthen their zeal, Dante, about 1310, addressed a circular letter 'to the kings, dukes, marquises, counts, the senators of Rome, and all the people of Italy, congratulating them on the prospect of happiness for Italy through the ministry of the pious Henry, who will punish the felons who opposed him and bestow mercy on the repentant,' &c. It was about this time that he wrote his book 'de Monarchia,' which may be considered as a profession of Guibeline political faith: it asserts the rights of the emperors, as successors of the Cæsars, to the supreme temporal power, entirely independent of the popes, who are the spiritual heads of the church. This creed was in opposition to the assumed rights of Gregory VII., Innocent III., and other pontiffs, who pretended to be above all crowned heads, and to have the disposal of thrones and principalities, an assumption which the Guelphs favoured in Italy in order to keep themselves free of the imperial authority. Both parties in fact acknowledged an external superior, although both wished to rule in their respective communities with as little subserviency as possible to the nominal supremacy of either pope or emperor. But there was this difference, that the imperial, or Guibeline party, was mostly supported by the nobles, especially of North Italy, who styled themselves vicars of the emperor, and was therefore more aristocratic in its spirit, while the Guelphs of Tuscany looked upon the pope chiefly as an auxiliary in time of need, whose temporal interference was less direct, and could be more easily evaded than that of the emperor, so as to admit of a more popular or democratic spirit in their institutions. Such at least was the theory of the two parties, for in reality the Guelph or popular families formed an aristocracy of wealth as much as the Guibelines were an aristocracy of birth and rank. Dante, in his book, 'de Monarchia,' is no servile advocate for despotism, for he maintains that sovereigns are made to promote the good of their subjects, and not subjects to serve the ambitious pleasure of their sovereigns. The latter are to rule so as to soothe the wayward passions of men, in order that all may live in peace and brotherly feeling. But still he derives their authority from God, and he quotes in support of his system, Aristotle, the Scriptures, and the Roman History, agreeably to the scholastic logic of his times. This book 'de Monarchia' was burnt at Bologna by order of the papal legate after Dante's death.

Henry VII. came to Italy in 1310, was crowned at Milan as king of Lombardy, and the following year he besieged Cremona, Brescia, and other places. It was about this time that Dante, impatient to see the emperor come into Tuscany to put down the Guelphs, addressed to him an epistle which begins thus:—'Sanctissimo triumphatori et domino singulari, domino Henrico, divina Providentia Romanorum regi, semper Augusto, devotissimi sui Dantes Aligherius Florentinus et exul immeritus, ac universaliter omnes Tusci qui pacem desiderant terræ, osculantur pedes.' He then entreats the emperor not to tarry any longer on the banks of the Po, but to advance south of the Apennines and put down the spirit of Guelph sedition at Florence, against which he inveighs in no moderate terms, and which, he says, strives to predispose against him the mind of the sovereign pontiff. He speaks of Florence as revolting unnaturally against her parent Rome, for Dante always affects to consider Rome as still the seat of the empire, and Rome and the empire are often employed by him as synonymes. This remarkable epistle, of which we had only an Italian version until the Latin text was discovered not many years since in the library of St. Mark, is dated from Tuscia, near the founts of Arno, April, 1311. (Dantis Allighieri *Epistolæ quæ extant, cum notis* Caroli Witte, Padua, 1827.) Henry came into Tuscany, threatened Florence, but without effect, was crowned at Rome, and on his return died suddenly at Buonconvento, near Siena, in August, 1313 This was a terrible blow to the hopes of the Guibelines, and of Dante especially. He now took refuge at Verona, at the court of Cane della Scala, where he appears to have been before, between 1308 and 1310. Cane was hospitable and generous to the Guibeline emigrants, but Dante, with his proud spirit and temper soured by adversity, could ill accommodate himself to the flattery of courts and the flippancy of courtiers, and he is said to have had some unpleasant bickerings with the people about Cane.

In a well-known passage of his poem he feelingly deplores the lot of the exile who is constrained to eat the bitter bread of patronage:—

> 'Tu proverai si come sà di sale,
> Lo pane altrui, e com' è duro calle,
> Lo scendere, e 'l salir per l' altrui scale.'
> PARADISO, Canto xvii.

With Cane himself, however, he seems to have continued on good terms; he speaks very highly of his hospitality in a passage just preceding the above lines, and there is a cordial letter from him to Cane, written probably in the latter years of his life, in which he dedicates to him his 'Paradiso,' the latter part of his great poem, and explains the object of it. He says that he styled it a comedy, because, contrary to the style of tragedy, it begins with sorrow and ends with joy; he distinguishes between the literal and the allegorical sense of his verses, and observes that his poem may be called polysensuum, having many meanings. He tells Cane the title of his work:—'Incipit Comœdia Dantis Alligherii, Florentini natione non moribus.' But the title of the part which he sends to him with the letter is:—'Incipit Cantica tertia Comœdiæ Dantis quæ dicitur Paradisus.' It is evident from this and other circumstances, that Cane had not seen the rest of the poem; indeed it is not likely that Dante ever communicated the whole of it to any one during his lifetime, as it would have made it impossible for him to have found refuge anywhere, as Foscolo closely argues in his very elaborate and very critical 'Discorso sul testo di Dante,' which is one of the most judicious and scholar-like commentaries on that poem.

Of Dante's Commedia we cannot enter here into any details, and we must refer the reader to the numerous commentaries, illustrations, and translations of it in every language of Europe. It is one of the few works of imagination which have stood the test of ages, and which will pass down to the remotest generations. It resembles no other poem; it is not an epic; it consists of descriptions, dialogues, and didactic precepts. It is a vision of the realms of eternal punishment, of expiation, and of bliss, in the invisible world beyond death. Its beauties are scattered about with a lavish hand, in the form of episodes, similitudes, vivid descriptions, and above all, sketches of the deep workings of the human heart. It is especially in this last department of poetical painting that Dante excels. Whether he describes the harrowed feelings of the wretched father in Ugolino, or the self-devotedness of the lover in Francesca, or the melting influence of the sound of the evening bell on the mariner and the pilgrim; whether he paints the despair of the reprobate souls gathered together on the banks of Acheron, cursing God and the authors of their being, or the milder sorrow of the repentant, chanting the 'miserere' along their wearisome way through the regions of purgatory,—he displays his mastery over the human feelings, and his knowledge of those chords that vibrate deepest in the heart of man. No other writer except Shakspeare can be compared to Dante in this respect. His touches are few, but they all tell. His power of invective is grand and terrific; witness his imprecations against Pisa, against Florence, against his enemies, his address to the German, Albert, representing to him the anarchy of Italy, and his repeated denunciations of the vices of the court of Rome. Yet Dante was a sincere Catholic; in his poem he places the heretics in hell, and Dominic in paradise; and manifestly shows everywhere his belief in the dogmas of the Roman church, but he attacks its discipline, or rather the relaxation of its discipline. He urges, like Petrarch and other Catholic writers of that and the following ages, the necessity of a reform; and above all, of a total separation of the spiritual from the temporal authority, things generally confounded by the Roman canonists. That many parts of his poem are allegorical is evident, but that the whole poem is an allegory, a political mystification, as some have pretended, seems a far-fetched hypothesis, an ingenious paradox. Dante was a declared enemy to the Guelphs of Florence and their allies, the Papal court and the king of France; and he poetically represents these three at the beginning of his poem by the emblems of the panther, the wolf, and the lion; but soon after he drops all metaphor, and inveighs against all three in the plainest and the bitterest terms, which he would not have done had he meant to be understood only by the adepts of a secret sect. In canto xix. of the *Paradiso* he passes in review all the kings of his time, and spares none of them in his reproof; in another place he has something to say against almost every one of the Italian cities and populations. In fact Dante never published his whole poem in his lifetime, for he had spoken in it too plainly to be able to publish it in safety. He wrote it out of the fullness of his heart, in detached parts, and at different periods, and his strains were influenced by the various political vicissitudes of the times, and by his own alternate hopes and despondency. About the year 1316 he had still a chance of his recall to Florence. It was suggested to him by a friend whom Dante in his reply calls father, probably because he was a clergyman, that he might return, provided he acknowledged his guilt and asked absolution. His answer was characteristic of his mind: 'No, father, this is not the way that shall lead me back to my country. But I shall return with hasty steps if you or any other can open me a way that shall not derogate from the fame and honour of Dante; but if by no such way Florence can be entered, then to Florence I shall never return. Shall I not everywhere enjoy the sight of the sun and stars? May I not seek and contemplate truth anywhere under heaven without rendering myself inglorious, nay infamous, to the people and commonwealth of Florence? Bread, I hope, will not fail me.' (See text and translation of this letter in Foscolo's *Essays on Petrarch and Dante*, 8vo., 1823, with a sketch of Dante's character.

In 1317-18 Dante appears to have been still wandering about Italy. In 1319 he repaired to Guido da Polenta, lord of Ravenna, where he was hospitably received, and where he appears to have remained till his death, which happened in September, 1821. He was buried in the church of the Minorites, under a plain monument. Bernardo Bembo, senator of Venice and podesta of Ravenna, raised to him a mausoleum in 1483, which was afterwards repaired in 1692 by cardinal Corsi, of Florence, and lastly in 1780 reconstructed altogether in its present form by cardinal Valenti Gonzaga, legate of pope Pius VI. The reproof—

'Ungrateful Florence! Dante sleeps afar,

was at last felt by the Florentines; a subscription was made and a monument was raised to the memory of Dante in the church of Santa Croce, which was opened to public view with great solemnity on the 24th of March, 1830. (Missirini, *Delle Memorie di Dante in Firenze*, 1830.)

For the manner in which the whole MS. of Dante's poem was found, collected, transcribed, and published, after his death, by his sons Jacopo and Piero, the early commentaries on the poem, its early printed editions, and the whole bibliographic history of the work, the reader will find ample information in Foscolo's *Discorso sul testo di Dante*, London, 1825; and also in Missirini, *Rivista delle varie Lezioni della Divina Commedia, e Catalogo delle piu importanti Edizioni*, Padova, 1832. Among the most complete editions of Dante's poems are: that of Venice, 5 vols. 4to., 1757-8, with ample notes, and including Dante's Life, by Pelli, and his minor poems and prose works; Lombardi's edition, Rome, 3 vols., 4to., 1791; and that of Florence, with illustrative plates, 1819, 4 vols., fol. Among the host of commentaries the one called l'Anonimo, and also l'Ottimo, written by a contemporary of Dante, who was evidently familiar with the poet, has been published for the first time at Leghorn in 3 vols., 8vo., 1827.

Among the numerous translations of the 'Divina Commedia,' in almost every language of Europe, that in English verse by Cary deserves to be mentioned with especial praise. An Italian translation of Dante's philological treatise 'De Vulgari Eloquio,' was published by Trissino in 1529, and the Latin text in 1577: this work has occasioned a very animated controversy between Italian philologists in our days.

DANTON, GEORGE JAMES, born at Arcis-sur-Aube, October 26, 1759, was one of the most remarkable characters among the leaders of the first French Revolution. He was educated for the bar, and was pursuing the peaceful avocation of a king's counsel when the first shocks of the great political earthquake called him upon the revolutionary arena. Danton was gifted by nature with those faculties which qualify a man for the dangerous office of a political agitator. He was tall and muscular, his features harsh and striking, and his voice resembled the roaring of breakers or the growling of the thunder. He was ambitious and bold; his eloquence, the offspring of an impassioned imagination, though without the charms of rhetorical elegance and philosophical depth, was overwhelming by its vehemence. It is no wonder that such a man soon became the leader of popular commotions and the terror of all who dared to oppose him.

In 1790, supported by the revolutionary club of the Cordeliers, founded by himself, he presented to Louis XVI. the petition of the forty-eight sections of the town of Paris against the king's ministers, accusing them of having lost the confidence of the nation. In 1791 he was elected member of the departmental administration of the Seine. After the imprisonment of Louis at Varennes, he was the prime mover of the popular assemblage of the Champ de Mars, in which he called for the dethronement of the king. On the 8th of August, 1791, he presented himself before the legislative assembly, and with unprecedented audacity told the representatives of France that their refusal to declare the throne vacant would be the signal for a general insurrection. The fate of Louis was decided, and Danton being elected minister of justice, became the head of that body of six men who were intrusted with absolute executive power. In this capacity he showed himself blood-thirsty, ambitious, vindictive, and mercenary; but he was also courageous and skilful in conducting public affairs at a time when every step was attended with danger.

When the Prussian army had entered France, and consternation began to spread in all quarters, when the leaders of the republican party were at a loss what to do to avert the impending hurricane, Danton ascended the tribune, and addressed the convention in one of the most impassioned speeches ever uttered by a demagogue; he ended with these eventful words:—'The country is in danger; to avert the crisis one thing only is needful—boldness, incessant boldness, nothing but boldness.' These words acted like a spell upon the French nation; within a few weeks fourteen republican armies stood upon the field of battle, and repelled with unexampled bravery the aggression of the allied forces.

If Danton had turned his energies only against the enemies of his country, his memory might have passed unsullied to posterity: but he allowed his wild passions to rage against his fellow-citizens; and most of the horrors of the French Revolution, particularly those of the days of September, were originated, supported, or encouraged by him. After the abolition of royalty Danton gave up the office of minister of justice for that of a president in the constituent committee and in that of Public Safety. While discharging these functions he prepared public opinion for the decapitation of the king. When the tribunal whose business it was to pass the sentence of death was sitting, Danton was absent; but he returned in time to vote for the king's execution. Like Sieyes, he gave no reason for his vote.

In the meantime the people of Paris, or rather the party which was headed by the clubs of the Jacobins, had chosen another leader, who in his private conduct was the opposite of Danton, and in his political views his most powerful antagonist. This was Robespierre, a man of singular character, who combined with the greatest moral purity and disinterestedness a stern, profound, uncompromising political character. Danton acted the republican in order to elevate himself; civil bloodshed was for him only the gratification of private revenge; the proscription of others a rich harvest for his own cupidity. Robespierre sought nothing for himself; the social regeneration of his own country and of the whole of mankind was his only aim. In the presence of Robespierre, Danton felt himself shorn of his laurels; he trembled at the thought of losing his ill-gotten wealth, and having failed in overpowering his antagonist, he withdrew from the theatre of political action, stigmatizing his rival by the name of 'ultra-revolutionist.' When summoned to give an account of his financial administration, he refused to submit to such examination, unless his five colleagues were also compelled to do the same, and retired to his native place.

It appears that, under the influence of hatred of Robespierre, and prompted probably by his avarice or ambition, he entered into some treasonable plot with the Duke of Orleans ('Egalité') and some other enemies of the republic. St. Just denounced him as a traitor before the Comité de Salut Public, and Danton was arrested the 31st March, 1794, and beheaded the 5th April of the same year.

Danton belonged to the school of the French materialists, and did not believe in the immortality of the soul. During the trial, and even on the scaffold, he preserved his undaunted courage. 'Soon,' said he to the executioner, 'I shall fall back into my original nothingness; yet my name shall live for ever in the pantheon of history.' He left a wife, but no legitimate children.

DANUBE, The, called by the Germans Donau, and by the Hungarians Duna, is a river of the first rank, and the second of European rivers, being inferior only to the Volga. Its course is calculated to be about 1770 miles, and the surface drained by it and its numerous tributaries probably exceeds 300,000 square miles.

In its long course from west to east it traverses more than 22° of longitude (from 8° 10′ to 30° 30′ E. long.); the most northern part of its basin falls only a little north of 50° N. lat., and the most southern does not reach 42° N. lat. But though the countries drained by it do not extend over eight degrees of latitude, they differ greatly in climate and productions, a circumstance owing to the different elevation of the three great plains which are traversed by this river. The most western, the plain of Bavaria, is between 1100 and 1200 feet above the level of the sea: the central plain, or that of Hungary, about 300 feet, and the lower plain, or that of Wallachia, probably less than 100 feet. Geographers have divided the course of the river into three parts. Its upper course is through the hilly country which surrounds its sources, and through the Bavarian plain and the mountains which divide that plain from the plains of Hungary. It terminates a few miles east of Vienna. The middle course extends from Vienna to the Demirkapi, which divides the Hungarian from the Wallachian plain, and the lower course traverses the last-mentioned plain.

The Danube originates on the eastern declivity of the Black Forest, about twenty-four miles from the banks of the Rhine, in 48° 6′ N. lat., and 8° 9′ E. long., at an elevation of about 3000 feet above the sea. It is here a mountain torrent, which is called Breghe. Near Danaueshingen it is joined by another mountain-stream, after which junction it receives the name of Donau, or Danube. Its general course at first is to the east, but afterwards it declines to the north-east, in which direction it continues till it reaches Ratisbon. From this place to Efferding, some miles west of Linz, it runs south-east by east, and from Efferding its general course is east. At Ulm, where it is joined by the Iller from the south, the river becomes navigable for barges; its surface is here 1255 feet above the level of the sea, and at Donauwörth, where it enters the plain of Bavaria, 1160 feet. Before it enters that plain it runs for the most part of its course along the southern base of the dry and sterile table-land called the Rauhe Alp, which rises to an elevation of 2000 feet and upwards above its level, and contributes to it only a few rivulets. On the south numerous offsets from the Alps approach the river, forming hills of moderate elevation with gentle declivities, and inclosing charming valleys of great fertility. The affluents which descend from these valleys to the Danube are numerous. The Iller rises in the Alps, on the western declivity of the Hoch Vogel, and runs nearly due north to Ulm; the Lech originates in the Alps of the Vorarlberg, and runs near its source east, but afterwards north; it enters the Danube a few miles below Donauwörth, and bounds the Bavarian plain on the west.

The Danube runs through the Bavarian plain from Donauwörth to Passau, changing nearly in the middle of its course from north-east to south-east. At Ingolstadt it is 1140 feet, at Ratisbonu 1050 feet, and at Passau 800 feet above the level of the sea. That portion which lies south of the river is an extensive plain, which reaches to the very foot of the Alps, and on which comparatively few hills and rocks are dispersed. It is traversed in a diagonal line by the Isar, which rises in the northern districts of Tirol, and runs north-east; this river is not navigable by barges, but timber and fire-wood are floated down. On the eastern boundary of the plain runs the Inn, which has been noticed under AUSTRIA (vol. iii., p. 136). The plain north of the Danube has a much more uneven surface, rising frequently into gentle hills, which however nowhere attain the height of mountains. This plain extends beyond the boundary of the basin of the Danube, to the very banks of the Main, and even to the north of this river. As the high ground which separates the two river basins in this plain is not much elevated above the level of the Danube in this part, a water communication by a canal between the Danube and the Rhine could easily be effected. Charlemagne begun such a work, and near the town of Weissenburg a few traces of it are still visible. The Bavarian government took up the matter in 1834. This new canal is to begin on the Danube, near Kelheim, at the mouth of the Altmühl, to follow the bed of the last-mentioned river and of the Sulz to Neumarkt, and to pass thence over the water-shed to Nürnberg into the valley of the Regnitz; then to run in the bed of this river to Bamberg and the Main. [BAVARIA, note.] Besides the Altmühl, this plain is traversed by two other considerable affluents of the Danube, the Naab, which rises in the Fichtelgebürge and flows southward, and the Regen, which originates on the south-western declivity of the Böhmer Wald, and has a general western course.

The third part of the upper course of the Danube is that between Passau and Vienna. At Linz its surface is 650 feet, at Vienna 421 feet, and at its entrance into Hungary 417 feet above the level of the Black Sea. Through all this distance it runs between the steep offsets of the Böhmer Wald, and the northern ranges of the Alps of Salzburg and Styria, which here in some places attain a great elevation (from 3000 to 5000 feet). The level country on the banks of the river is of small extent, except as we approach Vienna, where the mountains recede so far as to leave a considerable plain on both banks. In this part of its course the Danube receives the Traun, the Ens, and the

Marosh [Austria], and divides in several places so as to form islands, especially above and below Linz, and in the neighbourhood of Vienna. But the current of the river here, as well as in the Bavarian plain, is so rapid, that, properly speaking, it can only be navigated downwards: the barges must be tracked up the river. It has no rapids, but several dangerous whirlpools.

In its middle course the Danube first traverses the Lesser Hungarian plain. At Presburg it is 401 feet, at Winshegrad 379 feet, above the sea, and at Ofen or Buda, which lies in the Great Hungarian plain, 348 feet above the sea. In its course through the lesser plain the current of the river is still rapid, though much diminished. It divides into numerous branches, which inclose islands, among which the largest is the island of Schütt, which is upwards of fifty miles long, and from four to nine miles across. As the adjacent country consists of very soft alluvial soil, the river frequently changes its course. Some ten years ago a minute survey was made of the river for the purpose of some important improvements. Several years were spent in considering these projected improvements, and when their execution was to begin, it was found that the maps which had been made were of no use, the river having changed its bed in nearly every part. In this plain the Danube is increased by the waters of the Leitha and Raab from the south, and the Waag and Gran from the north.

Between Gran and Waitzen the river flows between two mountain ridges. That on the south is the northern extremity of Mount Bakony, and on the north an offset of the Carpathians, called the Neograd range. At Waitzen it issues from the mountain defile, and changes its eastern into a southern course. In this direction it flows with a slow current and numerous windings through the greater plain of Hungary for nearly three degrees of latitude, till it meets, after its junction with the Drave, the Sirmian range or Mount Werdnik, which again deflects it towards the east. It then skirts the Hungarian plain on the south, dividing it from the hilly Slavonia and the mountainous Servia, till it arrives near Nova Moldava, where it again passes through a mountain valley. During its course through the Hungarian plain its waters are increased by those of the Sarvitz, Drave, and Save from the west, and Theiss and Temesh from the north. [Austria.] At Buda its surface is 348 feet, at Zambor 272 feet, and at Nova Moldava probably not much more than 200 feet, above the level of the Black Sea. Its average breadth between Waitzen and the mouth of the Drave is 600 yards, and its depth varies from 5 to 20 feet.

The mountain-valley of the Demir Kapi (the Iron Gate) is formed on the north by the Banat range, an offset of the Transylvanian Carpathians, and on the south by a lateral range of Mount Balkan; it extends from Nova Moldava in the Banat to Cherniz in Wallachia. In entering this narrow valley the rapidity of the river gradually increases. About four miles below the village of Dobra it forms a dangerous whirlpool, called Takhtali; and about the same distance below New Orsova is the Demir Kapi, where a ledge of rocks runs across the bed of the river, over which the water rushes with great noise, producing below it a number of dangerous whirlpools. Vessels drawing not more than 2½ feet may however descend it, when the water is not low; but it is impossible to ascend it, and thus this rapid, which does not occupy a space above 2000 yards in length, interrupts all water communication between Hungary and Turkey. It is supposed however that this obstacle could be removed at no great expense. At the Demir Kapi the Danube leaves the Austrian dominions and enters Turkey. A few miles lower down it issues from the valley, the country to the north sinks down to a flat, and the current of the river becomes slow and gentle.

On the mountains and hills which inclose the valley of the Demir Kapi on both sides are very numerous remains of Roman antiquities, which were investigated by Count Marsigli in the beginning of the last century, when this region was ceded to Austria by the peace of Passerowitz: an account of these remains is given in Marsigli's Danubius Panono-Moesicus, with a great number of inscriptions. Some few remains occur farther down the river, which are noticed by Marsigli. He also describes the remains of the bridge built by Trajan over the Danube, a short distance below the rapids of the Demir Kapi.

Along the lower course of the Danube the country on the south continues mountainous from the Demir Kapi to Lom Palanka; it afterwards becomes hilly, and by degrees sinks into a flat plain: east of Silistria it presents nearly a level surface with some swamps. The country to the north is the great level of the Wallachian plain. In this tract the river first runs nearly south from Chernitz to below Widden, then turns to the east and continues in that direction to about forty miles from the Black Sea, where it suddenly bends to the north. In this direction it runs upwards of 100 miles to the junction with the Sereth, and hence again to the east to its mouth. In this course the river frequently divides and forms numerous large islands, especially below Silistria. Its width, where it is not divided by islands, is between 1500 and 2000 yards, and its average depth being above 20 feet, it is navigable by vessels of considerable burden. From the north it receives the Aluta, or Alt, Sereth, and Pruth, which rise in the eastern Carpathians [Austria], and from the south the Morava which is formed by two large rivers, the Western and Eastern Morava, which drain a great portion of the northern declivity of Mount Balkan and the Isker. [Balkan.]

After having been joined by the Pruth, the Danube divides into several branches, which do not unite again, and thus it flows into the Black Sea by seven mouths, which are (enumerating them from north to south) Kilia Bagasi, Suline Bagasi, Kedrille Bagasi, Salvoa Bagasi, Kutsuk Bagasi, Portesca Bagasi, and Kurte Bagasi. The three last issue from the lake of Ramsin. Suline Bagasi is considered as the principal mouth, and is most navigated. It forms the boundary between Russia and Turkey.

The following particulars on the subject of the steam navigation on the Danube are from the Report of the Vienna Society to the 31st December, 1836. The company will soon have ten steam-vessels afloat besides a towing steamer. The present voyages performed are from Vienna to Lintz; from Vienna to Pesth; from Pesth to Drenkova; from Skela-Kladova to Galaez: from Pesth to Semlin; from Galaez to Constantinople; from Constantinople to Trebisond, and from Constantinople to Smyrna. The vessels engaged on these lines are eleven in number.

The Danube was known to the early Greek writers under the name of Istros (Ἴστρος), called by the Romans Ister, which was probably the genuine name of this river in the lower part of its course. The Romans learned the name Danubius from the natives on the upper course of the stream, with whom they were brought into contact by commerce and by conquest. Herodotus in his 4th book (chap. 48, &c.), has transmitted to us all that was known in his time of the Danube and its tributaries in the middle and lower part of its course. Strabo observes (p. 304), 'the upper parts of the river and the parts at its source, as far as the cataracts, are called Danubius, and flow chiefly through the country of the Daci; the lower parts as far as the Pontus (the Black Sea), and in the neighbourhood of the Getæ, are called Istrus.'

(Hoffmann's *Deutschland and seine Bewohner*; Berghaus, *Annalen*, Nos. 127 and 134.)

DANZIG, one of the four administrative circles of the province of Prussia, consisting of portions of what was formerly called Western Prussia. It lies between 53° and 55° N. lat. and 7° and 10° E. long. Its northern boundary for about 92 miles is the Baltic; on the east it is bounded by the circle of Königsberg, and on the west by Pomerania. Its area is about 3197 square miles. The surface is level, with a gradual slope from the banks of the Vistula to the Baltic, and is occasionally broken by small elevations, which the natives designate by the name of Berge (or mountains), and of which the highest is but 500 feet. The soil is in many parts sandy, and there are several tracts of swamps; but in general it is productive, and along the banks of the Vistula exuberantly fertile. The circle raises more grain than its consumption requires, and great quantities of vegetables and fruit. The minor circle of Marienburg has extensive woods and forests, of which Danzig contains altogether nearly 800,000 acres. Horses and cattle, though in general of an inferior kind, abound on the luxuriant pasture grounds of the low lands. There are very considerable fisheries along the coast, and salmon, eels, and other fresh-water fish are taken in great quantities in the inland lakes, sheets of water, and streams, such as the Frische Haff, Strand See, Drausensee, &c. Amber is obtained on the shore in the vicinity of Danzig. The principal rivers which water this circle are the Vistula, Schwente, Sorge, which takes the name of the Elbing before it falls into the Frische Haff, Thiene, and Motlau. Danzig contains 12 towns, 6 market-towns, and 2047 villages, and is divided into 7 minor circles; viz.

	Sq. miles.	Pop. 1831.	Chief Towns.
Danzig	491	112,827	Danzig, 54,800
Neustädt	553	35,264	Neustädt, 1450. Putzig, 1950
Karthaus	549	29,157	Karthaus, 350
Elbing	272	46,683	Elbing, 22,400. Toklemist 1700
Marienburg	317	44,807	Marienburg, 5600. Neuteich, 1640
Stargard	533	34,681	Stargard, 3000. Dirschau, 2200
Behrendt	482	23,130	Behrendt, 1600. Schöneck 1700
	3197	326,549	

In 1817 the number of inhabitants was 242,547, so that the population between that year and 1831 had received an accession of 84,002 souls. At present (1837), it is estimated at about 340,000. In 1835, the number of births was 13,444; and of deaths, 10,306; which gives an increase for that year of 3138. The manufactures of this circle, of which the leading branches are woollens, linens, leather, and beer, are not extensive, and are situated almost wholly in the larger towns. A very extensive trade is carried on with foreign parts from the ports of Danzig and Elbing.

DANZIG, or GDANSK, in 54° 21′ N. lat. and 18° 38′ E. long., the capital of the administrative circle, is on the left bank of the principal arm of the Vistula, about three and a half miles from the shores of the Baltic. It is traversed by the Motlau and Radaune, which flow by several channels into that river. In ancient records it is called Gidanie and Gedansk. The first mention of it occurs in the tenth century, and it was long afterwards a bone of contention between the Danes, Swedes, Pomeranian princes, and Teutonic knights. In 1454 it sought the protection of the kings of Poland, who recognized its independence to the fullest extent, and admitted its citizens to enjoy every right possessed by the Poles themselves. In 1733 it gave shelter to King Stanislaus, but, after enduring a furious bombardment by the Russians and Saxons, was forced to acknowledge Augustus II., his rival, as legitimate sovereign of Poland. Prussia, by her acquisitions, at last hemmed in this little state so completely, that in 1772 its commerce with the interior was almost annihilated by heavy dues laid on its exports by that power. On the re-partition of Poland in 1793, Danzig was compelled to admit a Prussian garrison, and to make its usages harmonize with the institutions of its new masters. From this time until the breaking out of the war between France and Prussia in 1806, the town again rose to affluence and prosperity, but it experienced another reverse in 1807, on its falling into the hands of the French, by whom it was besieged for four weeks, under the command of Lefevre, subsequently Duke of Danzig. In the same year the treaty of Tilsit erected the town and a surrounding tract of about 230 square miles into a free state under the antient Danzig code of laws. The French, in spite of this change, treated the town as their own possession, burthened it with enormous contributions, and governed it by the 'Code Napoleon.' Again its trade was almost annihilated; and this unfortunate state of things continued until the 24th December, 1813, when it capitulated to the Russians and Prussians, after sustaining a severe and destructive siege of eight months. On the 3rd of February following, the King of Prussia was again recognized as its full sovereign. Danzig is at this time one of the strongest fortresses and most flourishing towns in his dominions. Many parts of it are in the fine old style of building, though not regularly laid out: but a great number of the streets are narrow and crooked. Within the walls, which consist of ramparts, wet-ditches, crossed by four drawbridges, leading to as many gates, nineteen bastions and the citadel of Hagelsberg, forts Zigankaberg and Bischoffsberg on adjacent eminences, the town is divided into the Altstadt, Vorstadt, Rechtsadt, Niederstadt, Langgarten, and Speicher-insel, and is about two and a quarter miles in circuit. Without the walls there are nine suburbs. The Langgarten, the finest quarter, is traversed by a broad handsome street, planted with linden-trees; the Rechtstadt too has some spacious streets and handsome houses in it; but the Old Town (Alt-stadt) is what its name almost implies, close, dirty, and ill-constructed. There are no spacious or even regular squares; the markets themselves being no more than broader kinds of streets. The Speicher-insel contains the storehouses and magazines. The number of houses was in 1804 5340, with 49,465 inhabitants: in 1817, 4561, with 52,821 inhabitants; in 1825, 4690, besides 600 in the suburbs: and in 1831, 5201, with 56,932 inhabitants, besides the garrison, the number of which is about 7000. There are 21 churches in all, 13 of which are Lutheran, 4 Reformed-Lutheran, and 4 Roman Catholic. St. Mary's, the High Church, a Lutheran place of worship, is a remarkable edifice built in the shape of a cross; it was commenced in 1343, and finished in 1401: the roof rests on 28 columns, and its exterior is ornamented with 10 small towers: it has a lofty steeple, 3722 windows, and 19 altars. A Dutch painting of the Last Judgment, for which the emperor Rudolph offered 40,000 dollars, is suspended against one of the columns. There are also 2 Mennonite places of worship, 2 synagogues, 3 monasteries, and a convent, in the town. Danzig is the seat of the provincial administration. Its schools consist of a royal school of navigation: a gymnasium with 7 professors, and a library of nearly 30,000 volumes, the 'Grey cloisters,' a public seminary founded in 1580, a normal school, 2 superior civic schools, a school of arts, and a peace society (Friedens-gesellschaft), which enables 16 young men of talent to complete their studies at the universities and elsewhere. It has a board of trade and navigation, a tribunal of commerce, a humane society, a public library, an orphan asylum, and house of correction, a foundling hospital, an infirmary and obstetric institution, 4 hospitals, and societies of natural history and of natural and experimental philosophy, to the latter of which an observatory is attached. There are yards and slips for shipbuilding; sugar refineries, spirit and liqueur distilleries, breweries, copperworks, and manufactories of silks, woollens, linens, leathers, hats and gloves, soap and starch, earthenware, arms, steel-ware, hats, tobacco, &c. Independently of these branches of industry, the town has a very considerable trade with the adjacent provinces and foreign parts, and exports large quantities of corn, timber, pot and pearl ashes, quills, brandy and spirits, wool, flax and hemp, &c. It has been calculated that the annual value of the exports is more than six millions of dollars, or about 830,000*l.*, and of the imports upwards of two millions, or about 275,000*l.* Above 630 vessels enter the port annually, and the tax on trading occupations produces above 4300*l.* a year. Among the outworks is the intrenched camp on the island of Neufahrwasser, which covers the approach from the Baltic.

DAPHNE, a genus of thymelaceous plants, containing many species, inhabiting the more temperate parts of Europe and Asia. Among them some are cultivated in gardens for their beauty or fragrance, others are of medicinal importance, and a few are employed in the manufacture of hemp and paper. We shall briefly notice the more remarkable of these.

The genus Daphne is distinguished in its natural order by having eight or ten stamens inclosed within the calyx, a simple stigma, a succulent fruit, and a calyx the orifice of whose tube is destitute of appendages.

D. Mezereum, the mezereon of the gardens, is a deciduous plant, with white or purple fragrant flowers, sitting close to the stem, and appearing on the naked branches before the leaves are unfolded. It is a favourite in gardens, and succeeds in almost any well-drained light soil where the air is not poisoned by the smoke of coal-fires. It is found wild in the mountainous woods of many parts of the middle and south of Europe. It is met with in woods in various counties of England: the berries are smooth, shining, and bright red.

All the parts of this and indeed of the other species, as far as they have been examined, are extremely acrid and poisonous. If the bark is bruised and applied to the skin it produces severe blisters, and is sometimes substituted for cantharides when that drug cannot be employed with safety. Taken internally, the bark, leaves, and fruit act as cathartics, but require to be administered with extreme caution; for they are apt to produce dangerous and even fatal consequences. Linnæus speaks of a person having been killed by a dozen mezereon berries; and they are employed in Sweden to poison wild animals. According to Fée, the very odour of daphne, agreeable as it is, is attended with danger; he says that if kept in sitting-rooms they will bring on headache and fainting. It is moreover asserted that Russian and Tartarian women sometimes rub the berries of the mezereon on their cheeks to produce a slight irritation, which of course gives the effect of rouge, only in a more permanent degree.

D. Laureola, the spurge laurel, is another British species, found wild commonly in woods and hedges. It is a handsome evergreen bush, with the aspect of a laurel. The leaves are placed very close together; they are of a leathery consistence, deep green, lanceolate, acute, and narrowed to the base. The flowers are green, and grow in little short clusters, which are nearly concealed by the leaves. The berries are, when ripe, a deep purple black. We have no species that grows more readily beneath the shade of trees; and as its appearance is highly ornamental, it would be a most useful garden plant, if it were not for the dangerous berries, which children are apt to eat. An ointment for keeping open blisters is prepared from this plant.

D. pontica, one of the plants which is reputed to have contributed to the poisonous quality of the honey that was eaten by Xenophon's soldiers, is very like this species, and is often cultivated as a hardy evergreen.

D. Gnidium, the Garou bush, an evergreen with narrow sharp-pointed erect light-green leaves, and branching clusters of white fragrant flowers, is a common plant in dry waste places in the south of Europe. It will not live in the open air in England, except in the warmest counties. Both the berries and leaves are employed by the French as purgatives; the plant also affords a good yellow dye.

D. Cneorum, a native of grassy places in the Alps of Switzerland and the rest of central Europe, with its trailing stems, numerous small narrow blunt deep-green leaves, and clusters of rich purple fragrant flowers, is one of the most beautiful of all plants, when it finds a soil and climate that suit it. At Bagshot, for instance, and in similar situations, it is, under good management, quite unrivalled by the other hardy shrubs among which it grows. It will not succeed where the soil is otherwise than sandy and peaty, nor can it bear the impure atmosphere of large towns.

D. Collina, Alpina, Neapolitana, and *Tarton-raira* are other species cultivated in gardens. The first has dull purple sweet-scented flowers, and is sufficiently common in collections; the others are rarer. All are impatient of wet in winter: but if at that season kept tolerably dry, will bear considerable frost, and are desirable garden plants in the milder parts of England.

In addition to the acrid and dangerous properties which appear to be common to them all, some species are remarkable for the toughness of their fibre, and for the economical purposes to which they are applied. From *D. Cannabina* is prepared the best kind of writing-paper in China, according to Loureiro; but it must be observed that this statement, if true, is at variance with what is observed in Nepaul, where the daphne-paper is very brittle and bad.

D. Lagetta, the lace-bark tree of Jamaica, is most remarkable for the tenacity of the fibre of which its bark consists, and for the facility with which it may first be separated into thin layers and then into distinct meshes. If the inner bark of this plant be macerated in water, it may be readily separated into layers no thicker than the finest lace, and which, after having been pulled a little sideways, resembles in some measure that fabric. King Charles II. is said to have had a cravat, frill, and ruffles of lace-bark presented to him by his governor of Jamaica.

DAPHNE MEZEREUM is an indigenous shrub; the bark obtained in spring from the stem, the thick branches, and even the root, is officinal. It is covered by a thin epidermis, green within, brown without. It is destitute of smell, but has a very acrid pungent taste, lasting for hours, and causing vesications. Its virulence even amounts to a poisonous degree, but is said to be lessened by camphor.

In the London Pharmacopœia it only enters as an ingredient into the decoction sarsap. comp. It consists of an acrid resin and daphnin.

The bark yields its properties to water, and still more perfectly to vinegar. The simple decoction of the Edinburgh Pharmacopœia certainly possesses considerable power. Mezereon in a small dose acts upon the secretions of the salivary glands, the mucous membranes, the kidneys, and the skin. It also rouses the nervous energy of the brain, as its action in many cases of coma and stupor proves.

It may be employed locally to stimulate the salivary glands, or to remove paralysis of the mouth or throat; when so employed it is to be chewed, but the saliva must not be swallowed, as its acrimony causes inflammation of the stomach and intestines; and this may even be fatal from the hæmorrhage, vomiting, and purging which attend it. The berries swallowed incautiously produce the same bad effects.

The simple decoction, along with carbonate of ammonia, given in proper doses every two or four hours, has in several instances rescued patients from a state of imminent danger in the stage of collapse of typhus fever, or that of coma and effusion at the base of the brain, which sometimes occurs in scarlet fever. In torpor of the brain, in leuco-phlegmatic subjects, and in approaching amaurosis, it is also of use. It has also been found serviceable in chronic rheumatism and chronic cutaneous diseases. A portion of the bark macerated in vinegar and applied to the skin, forms a powerful vesicant.

DA'PHNIA. [BRANCHIOPODA, vol. v. p. 343.]

DAPHNIN. Vauquelin first pointed out, in the 'Annales deC himie,' t. lxxiv., the existence of a peculiar acrid principle in the mezereon (*Daphne Mezereon*). Its properties have been since more particularly examined by Gmelin and Bär. It is prepared by precipitating a decoction of mezereon bark by subacetate of lead, and decomposing the washed precipitate by sulphuretted hydrogen; the solution is then filtered, evaporated, and the residue digested in cold anhydrous alcohol, from which daphnin crystallizes.

When it has been purified by washing with cold alcohol, solution in water, and recrystallization, it forms colourless bitter crystals, which are neither alkaline nor acid: in cold water they are sparingly soluble, but more so in hot, and also in alcohol and æther. Nitric acid converts it into oxalic acid. It does not appear to have been analyzed.

DA'PSUS, a genus of Coleopterous insects. [ECMORPHUS.]

DA'PTUS (Fischer), a genus of Coleopterous insects of the family Harpalidæ. Generic characters:—mentum deeply emarginated and without any tooth-like process in the middle; antennæ rather short, and moniliform; second joint of the labial palpi somewhat oval; four basal joints of the four anterior tarsi slightly dilated, short, and triangular; body more or less elongated, the elytra with their outer margins almost parallel. *Daptus Vittatus* is of a pale yellowish colour, with an oblong black spot on each elytron; the head and thorax are more or less clouded with brown or black in some specimens.

This species is about a quarter of an inch in length, and inhabits sandy districts in the vicinity of water in the southern parts of Russia and France.

Daptus in russetus (Dejean) has the same colouring as the last, but it is of a larger size, being upwards of half an inch in length; it inhabits North America.

DARABGHERD, or DARABJERD, commonly called Darab, is a town in Persia, in the province of Farsistan, about 26° N. lat., and 54° 50′ E. long. It was formerly a town of great extent, but like many other towns in Persia it has fallen from its former splendour. But although a great part of it is in ruins it still contains between 15,000 and 20,000 inhabitants. It is on the banks of a small river in an extensive plain, which is intersected with villages and cultivated lands. The town is surrounded with groves of dates, oranges, and lemons; the juice of the lemon is exported to every part of Persia. The tobacco cultivated in its neighbourhood is esteemed for its mildness, and sent not only to Shirauz, and other parts of Persia, but also to India and Arabia. There are some antiquities in its neighbourhood, as the ruins of an aqueduct, some sculptured rocks, and a caravansarai, hollowed in the very heart of a mountain, but their age cannot be ascertained. (Kinneir; Sir W. Ouseley.)

DARDANELLES, The, are fortifications erected on both sides of the Hellespont, which from them take also the name of the Strait of the Dardanelles. This strait, which divides Europe from Asia and unites the sea of Marmara to the Archipelago, extends in a south-west direction between 26° and 27° E. long. and between 40° and 40° 30′ N. lat. Its length is upwards of 50 miles, but its width varies. Near the sea of Marmara it is about ten miles across, but it narrows by degrees, so that opposite the town of Gallipoli it is only about two miles wide. This may be considered as the average breadth for the remainder of its extent. Towards the southern extremity it narrows still ore, at some places even to one mile and less. A strong rrent runs always through it from the sea of Marmara to e Archipelago, and the Turks have erected fortifications these narrow places for the purpose of rendering it im- ssible to attack 'their capital from the side of the Medi- rranean Sea. Admiral Duckworth indeed sailed through e strait in 1807, but since that time the fortifications ve been improved and increased in number.

The fortifications originally consisted of four castles, o in Europe and two in Asia. Two, called the New stles, are situated near the entrance of the strait on the le of the Archipelago, where it is more than two miles ross. The castle of Europe is called Kilid Bahr, and that Asia Kum Kalesi; the former is provided with 70 guns d 4 mortars, and the second with 80 guns and 4 mortars. bout 18 miles farther to the north-east are the Old stles; that in Europe, the antient Sestos, is called Sed hr; that in Asia, the antient Abydos, Khanuk Kalesi. the former are mounted 50 guns, and in the second 84. t it seems that the name of Dardanelles is now espe- lly applied to some fortifications erected in modern times tween the castles, but considerably nearer to the Old an to the New Castle. In these new works 64 guns are ounted in Europe and 120 in Asia. The number of guns ounted in all these fortifications and some others of less portance is 689, besides 8 mortars.

'Strong as the Dardanelles are,' says Major Keppel, here in every direction the eye rests upon guns bearing a short and very narrow passage, the most dangerous rt is the approach to the inner (old) castles. Their ength consists in the position of the castle of Sestos, to ich, from the nature of the current and from the banks nning far out, a ship must come stem on, and inevitably raked, without the power of returning more than her w-guns until just abreast, by which time she would be eadfully cut up, if the fire were at all well directed.'

The same author states that the batteries are well built, d placed in spots judiciously chosen, and that the greater mber of the guns are *à fleur d'eau*; but that they have carriages, and cannot be pointed; they fire only when hip covers them. Among them are several immense ns, from which they discharge stone shot. The quantity powder which these large guns require is enormous: the gest is charged with 330 lbs.

No ship is permitted to pass the forts between sunset sunrise, and the guns must previously be dismounted the ports shut.

DARDA'NIA, a town of Troas, on the coast of Mysia, Asia Minor. It was said to have been founded by Dar- nus. (Strabo, p. 592, *a.*; *Iliad*, xx. 216.) The name rdania was also given to Dacia Mediterranea. [DACIA.]

DAR-FUR, a country in Africa, between Bornou and yssinia, lying between 11° and 16° N. lat., and between and 30 E. long. Its extent and real boundaries are y imperfectly known.

It may be considered as a large oasis, placed in the south- tern corner of the Sahara, and divided by deserts of con- erable breadth from Dar Berghami on the west, and m Kordofân on the east. The southern part of the untry is hilly, and contains valleys with brooks and rivu- s which have water all the year round. But the northern rt is a level country, partly covered with sand, and in er places by rocks: water is only obtained from wells. uring the rainy season it exhibits a fine vegetation, but ring seven or eight months in the year the whole district dried up, all the plants fade away, and even the trees lose eir foliage.

The periodical rains commence in the middle of June d last to the middle of September; they are generally ry heavy, and fall most frequently from three o'clock midnight; they are mostly accompanied by lightning. he changes of the wind are not periodical but instanta- ous. The greatest heat prevails with a southerly wind, d the greatest quantity of rain falls with a south-east. hen the breeze is from north or north-west, it is most freshing, but it does not generally continue long in that arter. When southern winds blow the hot air is filled th thick dust.

As soon as the rains begin the agricultural operations mmence. The grains raised are wheat, doku, kassob, d sesamum. They plant also beans, kidney-beans, lentils, d some leguminous vegetables peculiar to that part of frica. Water-melons, together with some other kinds, abound during the wet season, and also before if they are irrigated. Among the fruit-trees are tamarinds and dates, but the latter are few in number and their fruit small, dry, and destitute of flavour. Browne says that tobacco is indigenous in Dar-fur.

Neither horses nor sheep are numerous. The flesh of the sheep is indifferent, and they are covered with coarse wool, resembling hair, which is wholly unfit for any manufacture: they have not a large tail, like other sheep in this part of Africa. Goats are more numerous. Asses are of small size, resembling those in Great Britain. Cattle form one of the chief branches of wealth, and they are paid as tribute to the sovereign. Camels are very numerous and of all colours and sizes; their flesh is used for food.

The ferocious and wild animals are principally the lion, the leopard, the hyæna, the wolf, and the jackal; the elephant, which is said to gather in herds of four or five hundred, the rhinoceros, the giraffe, the hippopotamus, crocodile, and wild buffalo; no tame buffaloes are found in this part of Africa. Antelopes, ostriches, and civet-cats are also common. Iron seems the only metal which is found in the southern districts; besides alabaster, various kinds of marble and common salt occur here. Nitre abounds, but is not used.

The population of Dar-fur, which Browne thinks cannot exceed 200,000, consists mostly of the descendants of emigrants from the countries along the banks of the Nile, especially Dóngola, Sennaar, and Kordofân. Among them are also some families from Egypt, Tunis, and Tripolis. They use the language of Barabra, though they also speak Arabic. Arabs are also numerous in some parts.

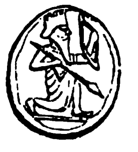
Cobbe, from whence the caravans depart for Egypt, is two miles in length, extending from south to north, but very narrow, and the houses, each of which occupies in its inclosure a large portion of ground, are separated from one another by a considerable space. The town is full of trees of every kind, and contains about 6000 inhabitants, all of them merchants. Other places are Cubcabîa, in the western district, the depôt of all the merchandise destined for Soodan, and Sweini, and the general resort of the merchants trading to Egypt, both in going and returning.

Dar-fur carries on some trade with Egypt by caravans, which go occasionally, but not every year. They take their route through the desert to Elwah, or the Great Oasis, passing in their way through the small oases, Bir el Malha, Leghea, Selimè, and Sheb. The articles which they bring to Egypt are slaves, camels, ivory, horns of the rhinoceros, teeth of the hippopotamus, ostrich feathers, gum, pimento, tamarinds, and leather sacks for water; also parroquets, monkeys, and guinea-hens, and a small quantity of copper brought from countries lying farther west. They take in return trinkets, cotton cloth, sword blades, small looking-glasses, fire-arms, coffee, silk unwrought, glass beads, copper culinary utensils, fessans, or red caps of Barbary, French cloth, and some silk stuffs of Damascus, Aleppo, &c., shoes of red leather, pepper, writing-paper, a considerable article, and soap of Syria. Hardly anything is known respecting the commercial intercourse between Dar-fur and the countries lying farther west; but it seems to be comparatively considerable, and thence the ivory, ostrich feathers, and slaves, seem to be brought. The inhabitants are Mohammedans, and are governed by a despotic sovereign. (Browne's *Travels in Africa*, which is the only authority.) [See BROWNE.]

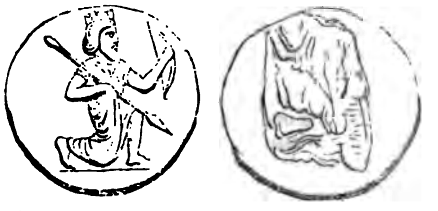
DARI'C (Δαρεικός, *Daricus*), a Persian coin of pure gold, stamped on one side with the figure of an archer crowned, and kneeling upon one knee, upon the other with a sort of quadrata incusa, or deep cleft. Harpocration (*in voc.* Δαρεικός) ascribes its origin and name to a Darius of a remote period; but Wesseling (*Observat. Variæ*, 8vo. Traj. ad Rhen. p. 241) and other later writers, upon the authority of Herodotus, give it to Darius Hystaspis, the father of Xerxes, who began his reign B.C. 521. The daric was equivalent in value to the Attic Chrysus (χρυσοῦς), and was worth twenty drachmæ of silver: five darics were consequently equal to an Attic mna of silver (Harpocration). Xenophon, in his 'Cyropædia' (vii.), informs us that the daric was a month's pay for a common soldier. Prideaux (*Connect. of Old and New Test.* 8vo. Lond. 1725, i. 183) observes, that in those parts of Scripture which were written after the Babylonish captivity (he refers to Chron. xxix. 7, and Ezra viii. 27), these pieces are mentioned by the name of *Adarkonim*; and in the Talmudists (see Buxtorf's *Lexicon Rabbinicum*, p. 577) by the name of Darkonoth, both from the Greek Δαρεικός. The daric was the gold coin best known in Athens; and when we consider the great number which are recorded to have been employed in presents and bribes alone, exclusive of the purposes of traffic, it would seem extraordinary that so few should have reached modern times, if we did not know that upon the conquest of Persia they were melted down, and recoined with the type of Alexander. Very few Persian darics are now to be seen in cabinets. There is one in Lord Pembroke's, which weighs 129 grains; and there are three in the cabinets at the British Museum, weighing about 128¼ grains each. Mr. Young, our most eminent dealer in coins, also possesses two, one weighing about 121¼ grains, the other 128¼; few other darics, it is believed, can be referred to in England. The witticism of Agesilaus (Plutarch, *Apophthegm. Lacon.* xl.) is well known, who, being forced to retire from an invasion of the Persian provinces by the bribery used by the great king, said that 30,000 *archers* had defeated him.

The silver coins which go by the name of darics are in truth miscalled. They had no such designation in antient times. The earliest of them, if we may rely upon Herodotus in a passage already referred to (iv. 166), were struck by Aryandes, the Persian governor of Egypt, in imitation of the darics. 'This Aryandes was governor of Egypt, and had been appointed by Cambyses. Some time after, presuming to put himself on an equal footing with Darius, he lost his life in consequence. Hearing by report, and seeing himself, that Darius was desirous to leave some memorial behind him, such as no other king had done, Aryandes followed his example, and met with his reward. Darius took the best gold, and purifying it to the highest degree, struck a coin. Aryandes, being governor of Egypt, did the same in silver; and the silver of Aryandes is now the purest. Darius being informed of what he was doing, put him to death, under the pretence that he was meditating a revolt.' The coining of these darics or Aryandics in silver, however, must have been continued after the time of Aryandes. No fewer than eight specimens of this description are in the cabinets of the British Museum. One, formerly Mr. R. P. Knight's, bears the name of Pythagoras, as Mr. Knight conjectured, a king or governor of Cyprus. Others, which have the figure of the archer crowned on one side, have a mounted horseman on the other. They are generally considered as antient Persian coins, and are commonly, though without any assignable reason, except as bearing the figure of an archer, called darics.

	Grains.
Daric of gold in the British Museum	$128\frac{4}{10}$
Do.	$128\frac{6}{10}$
Do.	$128\frac{4}{10}$
Daric of silver	$235\frac{[illegible]}{10}$
Do.	$228\frac{8}{10}$
Do. smaller of silver	84



Gold Daric. British Museum. Actual Size.



Silver Daric. British Museum. Actual Size. Weight, 236 grains.

DARIEN, the GULF of, forms the most southern portion of the Caribbean Sea, extending from 7° 56′ to 10° N. lat., between 76° and 78° W. long. Its most southern recess is called the Bay of Candelaria, which begins on the north between Cape Tiburon and Punta Caribana. This latter bay forms a spacious harbour capable of containing all the fleets in the world, and has a good anchorage of from eighteen to thirty fathoms deep, sheltered against every wind, and only subject to a strong sea in the months when north winds prevail. Not far from the sou tremity of it is the mouth of the Rio Atrato. *App.*)

DARIEN, ISTHMUS of. [PANAMA.]

DARI'US, the name of several Persian king I., commonly called Darius Hystaspis, or the son pis, belonged to the royal house of the Achæm mounted the throne B.C. 521, after having, wit conspirators, despatched the usurper Smerdis. day agreed among them, according to Herodo 83), that they should assemble on the followir before sunrise on horseback, and that he wl neighed first to the rising sun should be king: t Darius neighed first, and Darius was saluted ki 87).

Darius was in fact the founder of the Persia tion. Countries which Cyrus and Cambyses subdued he first organized into a systematic king divided his vast empire into twenty satrapies or and appointed a fixed tribute to be paid, as we gular supply to be sent for the provisions of the the king's household (iii. 89-96).

A system of communication between differen the empire was established by means of couriers at certain distances for the transmission of the sages.

Soon after his accession to the throne, Darius by Syloson, the brother of Polycrates, tyrant of S reminded him of the cloak with which he had ob in Egypt, when acting as one of the guards of Darius offered him any reward he would name: to be restored to Samos, and put in possession of dom of his late brother. Darius sent Otanes wit to Samos, and soon succeeded in reducing the isla andrius, who was in possession of it at the t allowed to quit it (iii. 139-141). Meanwhile the of Darius was called off to another and more affair. The Babylonians had revolted, and made parations for resistance. Darius marched agai with considerable force, and besieged them for a eight months, but without success, till the artifice o put him in possession of the city. Zopyrus, o officers of Darius, after cutting off his own nose and lacerating his body in a frightful manner, we the enemy, telling them that this was the treatme got from Darius, and he had therefore come ov that he might aid in taking revenge on the tyr Babylonians received him gladly, and not doub moment the truth of his story, gave him an imp of command, and soon intrusted to him the w which he delivered up to Darius. Darius impal the chief citizens, and destroyed the walls and g city (iii. 150-160). Darius employed the Greek Scylax of Caryanda, to follow the Indus to the oc survey the country (iv. 44); and the discoveries whic were followed by the subjugation of a portion of t (iv. 44; iii. 101). One of the principal events i was his expedition against the Scythians. He against them with a force which is computed at eight hundred thousand men. A bridge of boat across the Bosporus, and the work was execute drocles, a Samian, who received a present from t a reward for the skill which he displayed (iv. 85 rius pursued his march through Thrace, across th to the Don, but met with very ill success, and difficulty in escaping eventually. He returned nube, recrossed it, and came back into Asia, leavin zus in Thrace with orders to subdue the Pæones Megabazus subdued them and transported them where Darius allotted them a district in Phrygia.

In 501 B.C. some disturbances arose in the island which ended in the aristocratical party being quit the country. They applied to Aristagoras, g Miletus, for succour, which he was willing to was unable to grant without the aid of the Aristagoras communicated the scheme with spl mises of success to Artaphernes, the king's br governor of Sardis, who, after procuring the king intrusted a fleet of two hundred ships to the co Megabates, and ordered it to sail to Miletus board the forces of Aristagoras. After a fou siege their funds were consumed, and Aristagora tracted a debt with the Persian government wh

ly out of his power to discharge. An insurrection of
Ionian states, whom he excited to revolt, speedily fol-
l, and ended in the fall of M etus 494 B.C.

e Athenians had given Aristagoras aid in the revolt,
id thus excited the bitter hostility of Darius, who sent,
the command of Datis and Artaphernes, an army
a, where they were opposed and defeated by Mil-
in the plain of Marathon B.C. 490. (Herod. vi.,
.) [MARATHON.] The conquered Persians returned
Darius began to make preparations for another
on against the Greeks, as well as for reducing
pt ians, who had rebelled, but he died before the
e ment of the war B.C. 485, after a reign of thirty-
(vii. 4). He appointed his son Xerxes his succes-
.)

he became king, Darius had three sons, two of
e mentioned (vii. 2-97), Artabazanes and Aria-
After his accession he had four sons by Atossa,
l by other wives.

J S II., called Darius Ochus or Nothus, because
e illegitimate son of Artaxerxes. Soon after the
f Xerxes II., Darius succeeded in deposing Sog-
nd ascended the throne himself B.C. 423. By his
satis he had Artaxerxes Mnemon and Cyrus the
Nothing very remarkable occurred during his
at some successful wars were carried on under
nd other generals. He died B.C. 404, after a reign
en years, and was succeeded by his son Artaxerxes,
aid to have asked him on his death-bed by what
had acted in his administration, that he might
he same and find the same success. The king's
is said to have been, that he had always kept, to the
his knowledge, the strict path of justice and religion.
hon, *Anabasis*, i. 1; Diodorus, xii. 71; Justin, v. 11.)

RIUS III., or Codomannus, the last of the Persian
chs, succeeded Artaxerxes III., B.C. 336, after a
nterval, in which Arces, the youngest son of Artax-
was nominally king. Bagoas had poisoned Artax-
and then put Arces on the throne, that he himself
reign in his name: but after two years he deposed
nd put in his place Darius Codomannus. Darius
ing so obsequious to his wishes as he desired, he de-
ed to remove him in the same way as he had done with
rxes. The king, however, aware of his design, made
s himself drink the poison which he had prepared for
Darius was now firmly established on the throne,
ad little time to enjoy his security before he found
lf opposed by Alexander the Great.

as in the second year of Darius's reign that Alexander
over the Hellespont into Asia: he pursued his
till he arrived at the river Granicus (now the Oost-
when his first encounter with the Persian army took
The well-armed and well-disciplined troops of the
onians gained a complete victory. Another battle
ught at Issus, in Cilicia, where Darius took the com-
himself and was utterly defeated. He engaged in
again in a battle at Gaugemela, commonly called
ttle of Arbela [ARBELA], and was defeated. After
ttle of Issus, Darius's camp was plundered, and his
nother, and children, came into the hands of Alex-
who treated them with the utmost consideration and
Now that Susa, Persepolis, and all his treasures
me into the possession of the conqueror, Darius took
in Ecbatana, but was seized by Bessus, the governor
tria, who betrayed him in his misfortunes. Both the
and his prisoner fled before the march of Alex-
who hastened the pursuit till he came in sight of
when they fled precipitately; and because Darius
not follow them, Bessus and those about him dis-
d their darts at him, and left him covered with blood
mercy of the Macedonians. When the Greeks found
state he had just strength enough left to ask for
water to drink, it was given him by a Macedonian,
he requested to return his warm thanks to Alexander
e kindness he had shown to his wife, mother, and
en, and to say that he prayed the Gods to prosper him
his undertakings and to make him monarch of the

xander himself came up soon afterwards, and was
affected at seeing the king in this deplorable state.
ok off his own cloak and spread it over the corpse,
he ordered to be embalmed and sent in a splendid
to Sisigambis to be interred with the other monarchs
of Persia. Darius died B.C. 330, in the sixth year of his reign, and the fiftieth of his age. He enjoyed the reputation of a just and humane prince. With Darius ended the empire of Persia, which had lasted for upwards of two hundred years under thirteen kings. (Diodorus Siculus xvii. 5-77; Plutarch, *Life of Alexander*; Justin, x.) [ALEXANDER III.]

DARLINGTON. [DURHAM.]

DARMSTADT, the capital of the grand duchy of Hesse and of the province of Starkenburg, lies in the bailiwick of the same name, in 49° 52′ N. lat., and 8° 37′ E. long. It is situated on the banks of the small river Darm, between the Main and the Neckar, about ten miles from the Rhine, and also from the commencement of the Bergstrasse, a Roman road leading from Darmstadt to Basle. It was formerly a village, but, under the Emperor Louis the Bavarian, became a town of the principality of Katzenellenbogen, and a castle was erected for its defence. After the extinction of that family it lost much of its importance, until George I., son of the Emperor Philip the Great, made it his residence, since which period it has increased considerably both in extent and consequence.

Darmstadt is divided into the old and new town; the former is inclosed within old massive walls, and has a gloomy uninteresting appearance; the new town, however, although similarly defended, is built in better style, has broad, clean, and well-lighted streets, and handsome houses, although, from the great number of uncovered spots in it, it has a somewhat desolate aspect. The town has six gates; five public squares; the ducal residence (a large edifice, with a library of about 100,000 volumes), the military school, the heir-apparent's palace, a museum of natural history, with a small but choice gallery of paintings and antiques, and the ducal pleasure-grounds; a very handsome opera-house, and a riding-school, the handsomest building in Darmstadt, 320 feet long, 150 broad, and 90 in height, without pillars or other support in the interior; an arsenal, excellent barracks, house of correction, and magazines; the town church, containing the ducal vaults; one Lutheran, one Reformed, and one Roman Catholic church, which is a handsome circular structure on an eminence, with a splendid dome, supported by twenty-eight large columns; one ducal chapel, one synagogue, an orphan asylum, two hospitals, and a large reservoir for supplying the town with water in case of fire. There is likewise the gymnasium, with twelve professors; the pedagogium, a seminary for teachers; the Real school for the education of merchants, mechanics, &c.; an academy of design; a drawing-school for builders; fourteen elementary schools, the town school for boys and girls, a military and a free school; a bible society, freemasons' lodge, &c.

Darmstadt is the residence of the grand duke of Hesse, and the seat of various public boards, and the civil and criminal courts. It contains a population of 24,500 (in 1817, 15,450), who are chiefly dependent for support on the expenditure of the court, public functionaries, and garrison. There are a few manufactures (chiefly of woollens and linens): the remainder of the inhabitants are engaged in tanning, gardening, &c. The environs, especially towards the mountains, are very picturesque, and the soil, which is sandy, is highly cultivated. In the vicinity of Darmstadt is a curious magnetic rock, and Carlshof, an interesting farm, cultivated in the most perfect manner and containing a large nursery of trees. Darmstadt has six fairs every year..

DARNETAL, a town in France, in the department of Seine Inférieure, in the immediate neighbourhood of Rouen, and on a road leading from that city to Beauvais. It is a busy town, with a population of 5572 inhabitants, who are engaged in manufacturing fine woollen cloth, blankets, druggets, and other coarse woollens, cotton yarn, and printed calico. There are also several paper-mills and dye-houses. Rouen is partly supplied with water from a spring at Darnetal.

DA'RNIS (Fabricius), a genus of insects of the order Hemiptera, and family Cercopidæ. The species of this genus have the posterior part of the pro-thorax prolonged so as totally to cover the upper part of the abdomen and wings, or nearly so: this portion of the pro-thorax is of the form of an elongated and arched triangle. [CICADELLA.]

DAROO TREE is the Ficus Sycomorus, or Egyptian Sycomore; there is a picturesque view of this plant in

Salt's 'Abyssinia,' along with the Obelisk of Axum. [Ficus.]

DARTFORD. [Kent.]

DARTMOOR. [Devonshire.]

DARTMOUTH, a seaport, market and borough town, situated on the southern coast of the county of Devon, 30 miles south by west from Exeter and 203 W. S. W. from London.

In antient records this place is called Clifton-Dartmouth-Hardnesse, in fact comprising three adjacent towns. From the convenience of its harbour it was very early a place of some note, and in 1190 was the rendezvous of the fleet destined for the Holy Land. In the beginning of the 13th century it obtained a market and other valuable privileges. It sent two members to parliament from the 14th year of the reign of Edward III. to the passing of the Reform Act, which reduced the number to one. In the reign of Edward I. Dartmouth contributed 31 ships and 800 men towards the naval expedition against France.

Dartmouth was considered an important port during the Parliamentary war, and was strongly contended for by both parties; it was taken by Prince Maurice after a siege of four weeks, and garrisoned by the king's forces; but Fairfax shortly afterwards attacked it in person and took it by storm. The manor was granted by Edward III. to his servant Guy de Brien, and, after several mesne possessors, finally passed into the hands of the corporation.

The limits of the borough comprise 1650 acres, consisting of the parishes of St. Saviour, St. Peter's, and part of Townstall. Dartmouth has no less than 14 charters of incorporation, and also claims to be a borough by prescription. The jurisdiction is exclusive for all offences, except treason and capital felonies. The mayor, recorder, and justices hold quarter sessions, and the magistrates hold weekly petty sessions. The revenue of the corporation is about 1100*l.* a year.

Dartmouth is delightfully situated on a declivity on the west bank of the river Dart. Some of the houses are extremely old and possess some fine specimens of wood-carving; but generally the town is dirty and the streets narrow and ill-paved. The country around is exceedingly beautiful and picturesque, and contains some delightful country seats. A flying bridge has lately been established across the river Dart. The harbour is very safe and convenient, and can accommodate 500 ships. The entrance is between the ruins of Kingswear castle and the fort and church of St. Petrock, where a battery has been erected. The port is under the direction of a governor, appointed by the corporation, and extends from the river Teign to the river Erme, a distance of about 40 miles.

The parishes of St. Petrock, St. Saviour, and of Townstall, which now form the borough of Dartmouth, contain respectively 1035, 2316, and 1246 inhabitants, making a total of 4597.

The trade consists principally in the export of woollen goods and cider, and the import of wine, and formerly of iron. In 1828 there were 348 vessels belonging to the port. Nearly 3000 of the inhabitants are employed in the Newfoundland and other fisheries.

The river Dart is navigable as far as Totness, and its banks are surrounded with beautiful scenery. There are no fairs of any importance at Dartmouth. The market-day is Friday.

The living of St. Petrock is a perpetual curacy; the church is beautifully situated at the entrance of the harbour. St. Saviour is a perpetual curacy annexed to the vicarage of Townstall, in the patronage of the corporation. The interior of the church is highly ornamented. The pulpit is of stone, richly sculptured and gilt, and the screen is beautifully carved. The old oak ceiling is still in a good state of preservation. The living of Townstall is a discharged vicarage also in the patronage of the corporation. All three parishes are in the diocese of Exeter and archdeaconry of Totness. There are places of worship for Baptists, Independents, and Wesleyan Methodists. There are Sunday-schools in each parish supported by subscription. In 1715 there was a French church. There are several charitable bequests for the benefit of the poor and instruction of children: amongst others, Mr. John Lovering, in 1671, founded an alms-house for decayed seamen or their widows; but the house was accidentally burnt down and the charity has been entirely lost. In 1679 Walter Jago, John Haynes, and Arthur Holdsworth, gave a rent-charge of 18*l.* per annum to the parish of St. Saviour, 3*l.* 12*s.* of which was to be given to a Latin master and 3*l.* 12*s.* to Arithmetic master. The grammar-school has no furtl endowment. Newcomen, the inventor of the steam-engi was a native of Dartmouth.

DARWAR, a district in the province of Bejapore, formerly part of the territory of the Peishwa, and came i possession of the English in 1818. In the following y there occurred a serious failure of the harvest, accompan by an epidemic, which carried off one in twenty-four of population, amounting to 600,000. The revenue of district was at that time 152,150*l.* [Bejapore.]

From a return made by the political agent of the India Company resident at Darwar in 1825, it appears t there were then in the district 1441 villages, only 150 which were provided with schools, in which 2351 schol were instructed; 871 of these learned only reading, writi and simple arithmetic; 1390 learned to write on sand, on boards besmeared with a kind of earth called dowlac ram, and 107 were taught to read Persian books.

DARWAR, the capital of the above district, is situa in 15° 28′ N. lat., and 75° 8′ E. long. It is a fortified to and was besieged by an allied force of English and Ma ratta troops for twenty-nine weeks in 1791, when it rendered by capitulation. During the operations of siege the town was nearly destroyed, but has long been restored.

DARWIN, ERASMUS, an English physician and p siologist, was born at Elton, near Newark, on the 1 December, 1731. After studying at St. John's Coll Cambridge, and taking the degree of doctor of medicine Edinburgh, he established himself as a physician at Li field, where he married, and resided till after the death his first wife, by whom he had three sons. In the 1781, having again married, he removed to Derby, he died on the 18th of April, 1802, in the 70th year of age. He is said to have been a man of an athletic and of temperate habits, the advantage of which he opportunity of pointing out to those over whom his influ extended; his biographers give him credit for having much service to the poor of Lichfield in this respect.

Dr. Darwin claims a place in this work as a physiologist and a poet. In the year 1781 he published 'Botanic Garden,' a poem in two books; in 179 'Zoonomia, or Laws of Organic Life,' which was succeed in 1796 by a continuation of the subject, the whole form two volumes in 4to.: and in 1800, his 'Phytologia,' or losophy of Agriculture and Gardening, in one volume of rather more than 600 pages. All these works have cited considerable attention; by some they have extravagantly praised, by others as unreasonably depreciat and at the present day they are little read or consult Nevertheless, they are far from deserving to sink into and oblivion. This author was unquestionably a man a highly original turn of mind; he was unusually well in the physics of his day; he had a singular aptitu seizing and illustrating natural analogies, and above was fully impressed with a sense of the important tr a universal simplicity and harmony of design thro the whole creation. It is true that his analogies a imaginary, his theories untenable, and his illus overstrained, but many of these errors were in in the state of natural history in his day, and the are by no means sufficient to overbalance his to fame as a clear-sighted, ingenious, and ofte found physiologist. Darwin's 'Botanic Garden' vided into two books, very unequal in size and in The first, which explains the principal phenom vegetation, is superior in every respect to the which is devoted to what he calls the 'Loves of the P forming a poetical commentary upon some of the curious phenomena of vegetable fertilization. That character of this poem is by no means of a high order we think, be on all hands allowed, for its language is tawdry and tinselly, its similes extravagant, and its chinery fantastical and incomprehensible; but on the o hand it abounds in passages which have never been celled for their elegant and forcible description of natu objects in poetical language, and it can by no means admitted that where an author's powers are expen upon an illustration of the laws of any part of the cr tion, they are applied to mean and insignificant jects. It is only where he calls to his aid the fanc of the Rosicrucians that he wastes his talent and fatig

Ils 'Phytologia' is remarkable for the numnd ingenious ideas which it contains; they advance of those of his contemporaries to med when they appeared, but they are sinordance with many of those opinions which altogether recognized or are under discustrong probability of being finally adopted. e particularly insisted upon the close analogy and animals in their functions, showing that between the two kingdoms is the necessary f the difference between their wants, necests of life. He urged with great force that plant is the seat of a separate and in some endent system, that plants are therefore congeries of individuals living in concert ndependently; finally, he pointed out the n buds and seeds, showing that the woody is really analogous to the roots of seeds, by the adhesion of the descending matter which passes downwards from the buds. r, we thus give Darwin credit for a rank in s hardly been accorded to him before, we ld that his errors were neither few nor unimas too fond of tracing analogies between dis-; he readily adopted the ingenious views ut sufficient inquiry; he had the great fault credulous collector and a fanciful reasoner, prose writings are often inexcusably inele-ed, and ungrammatical.

IS. [THRUSHES.]

CTA. [AGOUTI, vol. i., p. 212.]

. [ARMADILLO, vol. ii. p. 350.]

JS. [MARSUPIALIA.]

TUM. A datum is any quantity, condition, matical premiss which is given in a parti- Thus in the question 'to draw a circle e its centre in a given line, and shall touch ght lines,' the data are as follows: 1, That ibed is to be a circle; 2, a certain straight e centre of the circle is to be on that straight her straight lines; 5, that the circle is to ight lines. Data may be divided into two ter class being the restrictions which it is ce upon the one already described in order em may be possible. Thus the preceding es absurd when the three straight lines are the line on which the centre of the circle lway between the two others. Either then ust be proposed with the limitation 'if it be express datum of exclusion must be intro-, that the three straight lines must not be , &c.

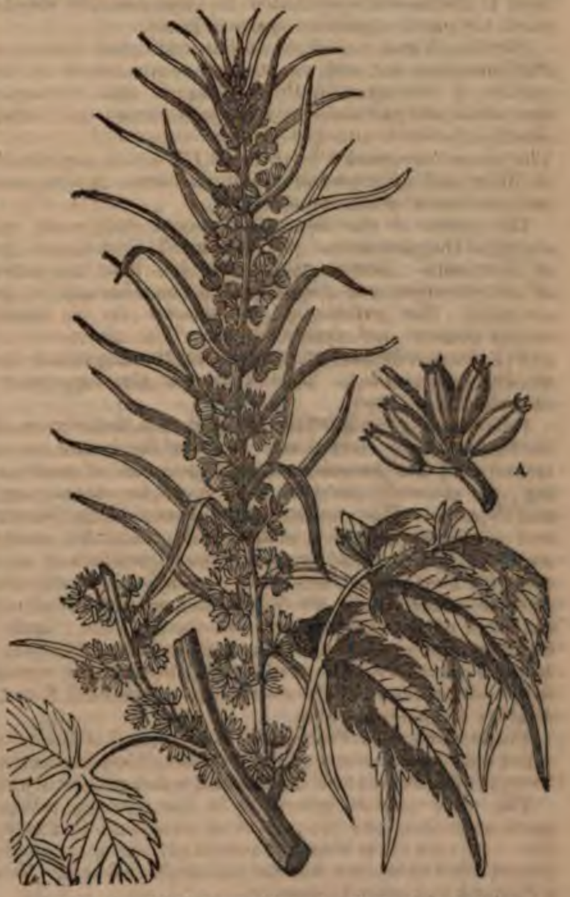
etymology of the word datum all legitimate re data when the premises are data. Thus, es which touch, there are also given two ave a common point in the line joining their ook of Euclid known by the name of Data deduction of magnitudes from other mag- to what they are, but as to whether they or not. Thus one of the propositions is, gnitude be cut in a given ratio, the segments e preface of Marinus to this book contains n the meaning of the term. [EUCLID.]

'E, a mineral which contains boracic acid, . It has been found at Arendahl in Nor- other places. It occurs both massive and rhombic prisms, the lateral edges and the which are usually replaced by planes. The lite is greyish or greenish white, and it is s specific gravity is about 3; it yields to the ture is imperfect conchoidal; the lustre is ous. According to the analysis of Vauque-of .

oracic acid . .	21·67
ilica . . .	37·66
ime . . .	34·
Vater . .	5·5
	98·83

EÆ, a small natural order of plants allied nd the other apetalous orders in their vicinity, hed by its inferior ovary with parietal placentæ. It has unisexual flowers; the males have a calyx of several pieces, and from eight to fifteen stamens; the females have an obsolete superior calyx, and three little recurved stigmas at the apex of an oblong one-celled ovary, with three many-seeded parietal placentæ. The seed-vessel opens at the end like that of Reseda; the seeds are inclosed in a finely netted bag, and contain a straight embryo without albumen.

Datisca cannabina, the commonest plant of the order, is an herbaceous diœcious perennial, with stems about three feet high, pinnated leaves with from five to nine ovate-acuminate coarsely-serrated leaflets, and long racemes of flowers collected in clusters in the axils of long linear bracts. It is a native of the southern parts of Europe, where, especially in Candia, it is used on account of its bitter tonic properties as a substitute for Peruvian bark; it also affords a yellow dye.



A male plant of Datisca cannabina. A, a cluster of ripe fruit from a female plant.

DATU'RA, a genus of Solanaceous plants, with a funnel-shaped angular five-lobed calyx, a corolla of a similar form, but much larger, and a four-celled capsule, which is either smooth or muricated externally; the base of the calyx moreover adheres to the seed-vessel in the form of a circular disk.

Several species of this genus are known in cultivation, the very large size of their funnel-shaped flowers rendering them conspicuous objects; they have however a nauseous odour, and are only handsome when in flower, for which reason they are not general favourites. They are all exotics, with the exception of the following, in whose properties they coincide.

D. Stramonium, the Thorn-apple, is by no means an uncommon annual upon dunghills, rubbish-heaps, and waste-places near houses. It grows about three feet high, with a light-green stiff stout stem, which is slightly downy near the upper end. The leaves are broad, oval, stalked, sharp-pointed, sinuous, and angular. The flowers are large, white, or occasionally dull light purple, and grow singly from the side of the stem opposite the origin of the leaves; they are erect, and placed upon a very short peduncle. Their calyx is tubular, elongated, a little swollen at the lower end, with five prominent ribs, ending in as many sharp-pointed lobes: after flowering, it all drops off, except the base, which surrounds the fruit in the form of a circular disk. The corolla is much larger than the calyx, of a similar form, but its lobes are more taper-pointed. There are five stamens, which are inclosed in the tube of the corolla. The ovary is covered with small sharp points, and contains four cells, in each of which is a considerable number of ovules. The style is cylindrical, smooth, and enlarged at the upper end. The fruit is a spiny oval capsule of four imperfect cells, which communicate with each other in pairs. The seeds are brown, kidney-shaped, with a scabrous surface.

This plant is well known, under the name of Stramonium, as a powerful and dangerous narcotic. Its leaves and seeds are the parts employed, and they are found to possess properties similar to those of henbane and belladonna. The leaves are occasionally smoked, especially by country people, as a remedy for asthma: the seeds are employed by thieves to drug the beverage of their victims. In small doses they produce symptoms of frenzy; in larger quantities, stupor and death. The poisonous principle of this and other species is considered a peculiar vegetable alkali, and called Daturine.

Datura arborea and *bicolor*, beautiful arborescent South American plants, the former with long white flowers, and the latter with yellow or scarlet ones, are noble objects in the gardens of this country. They participate in the properties of the true Daturas, but they are not now considered to be genuine species, on account of their calyx slitting on one side and remaining permanent around the base of the fruit; they are stationed in a genus called Brugmansia.

DATU'RA STRAMO'NIUM, or THORN APPLE, an introduced but now frequently self-sown and consequently wild plant, found particularly wherever a garden has been in which it flourished. The leaves and seeds are officinal. The leaves during drying diffuse a stupifying odour, and become deep grayish green; the dried leaves scarcely possess any odour: the taste is disagreeable, saline, and strongly bitter. The seeds are kidney-shaped, flat, about the size of linseed, uneven, nearly black: when bruised the smell is disagreeable and repulsive; taste bitterish and oily; by expression sixteen ounces of fresh seeds yield two ounces of clear fat oil, which has neither taste nor odour. The seeds of the other species of Datura are often substituted, perhaps without any great disadvantage. They are also confounded with the seeds of Nigella Sativa, which, though black, are smaller, nearly three-cornered, and have an acrid aromatic taste, and in considerable quantity are poisonous like those of Stramonium.

The seeds are used to form the extract; they, as well as the unripe capsules, yield the alkaloid called Datura, which crystallizes from its solution in alcohol or water in colourless shining aggregated prisms; without odour when pure, but when impure possessing a strongly narcotic odour; taste at first bitter, then very acrid, and like tobacco. This is extremely poisonous: one-eighth of a grain can kill a sparrow in less than three hours; and the smallest quantity applied to the eye causes very lasting dilatation of the pupil. At the ordinary temperature of the air it is quite unalterable: it is much less decomposable than hyoscyamia or conia. In a hydrous state it has a strongly alkaline reaction: acids completely neutralize it and form salts, which are procured by solution of daturia in dilute acids and evaporation in a moderate temperature. They are easily crystallizable. Geiger recommends daturia or its salts as a preferable form to any hitherto in use.

Stramonium in small doses causes slight convulsive action about the throat, with dryness of the tongue, disposition to vomit, and general diminution of sensibility, with slight increase of secretion of the skin, mucous membranes, and kidneys, but if the dose be larger, the brain becomes affected, and vertigo, indistinctness of vision, with dilatation of the pupil, disposition to sleep, or coma, but more frequently delirium, are added. The delirium is always peculiar, and the individual manifests a disposition to perform ridiculous actions, or assume absurd positions. If the dose be still larger, and produce fatal effects, the brain is usually found to be much congested, the vessels being gorged with blood. Large bleedings generally save the patient; emetics can rarely be made to act, as is observed when other narcotic poisons have been taken. Stramonium is most useful in cases of increased sensibility, particularly in local affections of the nerves; it is decidedly useful in allaying pain of the sciatic nerve, particularly when combined with ipecacuan. It has been recommended in mania, especially when accompanied with lucid intervals, in epilepsy, and hysteria; but with very variable success, probably to be accounted for by the careless preparation of the medicine. It is popularly used for smoking, to allay paroxysms of asthma, but its employment in this way is quite empirical, and regulated by no clear principle. By the action of heat during smoking, an empyreumatic oil is found, similar in properties to that of hyoscyamus.

DATU'RIA, a vegetable alkali, obtained from the seeds of the *Datura Stramonium*, or stramony; it is a colourless crystalline substance, which has an acrid bitter taste, and is very poisonous. It is soluble in about 280 parts of cold and 72 of boiling water, and is readily dissolved by alcohol. It combines with acids, forming salts, which are generally crystallizable, soluble in water, and suffer no alteration by exposure to the air. These salts are decomposed by the alkalis, potash, soda, and ammonia, which precipitate the daturia in the state of colourless flocculi. It does not appear to have been analyzed; but, like the other substances of the same class, there is no doubt of its being composed of hydrogen, carbon, oxygen, and azote.

DAUBENTON, LOUIS JEAN MARIE, a justly celebrated naturalist and zootomist, born at Montbard in Burgundy, on the 29th of May, 1716. The church was his destination, and he was sent to Paris to study theology; but he gave in secret those hours to medicine and anatomy which his father hoped he was devoting to ecclesiastical reading. The death of this parent left him at liberty to follow the path he loved: and, having taken his degrees at Rheims, he returned to Montbard, for the purpose of exercising his profession. But there was a kindred spirit that, happily for zoology, had been connected from infancy with Daubenton. The Comte de Buffon, born at the same place, knew him well in youth, and when, in after life, Buffon was appointed intendant of the Jardin du Roi, his thoughts reverted to Daubenton as the person of all others qualified by his zeal and ability to prosecute those anatomical inquiries, the details of which his own feebleness of sight prevented him from investigating. The count drew Daubenton to Paris in 1742, and in 1745 the office of Curator and Demonstrator of the Cabinet of Natural History was conferred upon a man eminently fitted by his quick discernment, his untiring diligence, and his inexhaustible patience, to fill the situation with the greatest possible advantage to the public. No one can open the 'Histoire Naturelle des Animaux' without being struck by the multitude and justness of the facts (for he carefully avoided all theory) with which Daubenton enriched that work, and in some degree corrected the fervid imagination of his brilliant coadjutor. But he did this without presuming in the least to draw general inferences: he confined himself strictly to facts: and such was his modesty, that Camper used to say of him that he himself was not aware of the discoveries which he had made. His valuable labours adorned the fifteen first volumes of Buffon's great work in 4to.; and the editions in which this essential part of the publication is wanting, are justly considered as deprived of their fairest proportions. But Buffon in an evil hour suffered his ear to drink the intoxicating poison of fawning flatterers, and published a little edition (in 12mo.), of which Daubenton's labours formed no part.. The hint was more than sufficient for the modest Daubenton, and from that time the assistance of Guéneau de Montbeillard and of Bexon in the ornithological department but ill supplied the exquisite dissections and demonstrations which had rendered the former part of the work so highly valuable to the physiologist. For fifty years did Daubenton labour without cessation in enriching and arranging the magnificent collection committed to his charge. He is said to have been the first professor of natural history who gave lectures by public authority in France, one of the chairs of the College of Medicine having been converted into a chair of natural history at his request; it was conferred on him in 1778. The Convention having elevated the Jardin du Roi into a public school, under the title of the Museum of Natural History, he was named Professor of Mineralogy, and retained the professorship as long as he lived. In 1783 he became Professor of Rural Economy at Alfort, and gave lessons in natural history at the normal school in 1795. To him France in a great measure owes the introduction and successful propagation of the breed of Spanish sheep. In 1799 he was elected a member of the senate, and the alteration in his habits caused by this new dignity is supposed to have hastened his death, which took place after an apoplectic attack of four days' duration in the night of the 31st December and 1st January, 1799 and 1800, when he was nearly 84 years of age.

Daubenton's life, with the exception of the cloud that came between him and Buffon, raised by the weakness of the latter, was a happy one. His hours were spent in pursuits that were dear to him; he was universally respected and beloved, for he was as amiable as he was learned; and his simple habits gave him, notwithstanding his natural weakness of constitution, a long life. Daubenton was married to the authoress of 'Zélie dans le Desert,' and though his union was in other respects most happy, he left no children.

Lacépède, Cuvier, and Moreau de la Sarte, have justly eulogized this good and great man.

Notwithstanding his incessant occupation at the Museum, he found time to publish much in addition to his writings in the 'Histoire Naturelle.' He was a contributor to the first Encyclopédie, and many of his papers on the natural history of animals and on minerals are to be found in the 'Mémoires de l'Academie des Sciences,' from 1754 to 1764. Two of his most interesting papers (though all are good) are those of 1762, on fossil bones pretended to be those of a giant, but which Daubenton referred to their true species, and of 1764, on the essential differences between man and the orang outang. His 'Instruction pour les Bergers,' 1 vol. 8vo., Paris, 1782, his 'Tableau Méthodique des Mineraux,' 1784, 8vo., and his 'Mémoire sur le premier drap de laine superfine du crû de France,' which also appeared in 8vo. in 1784, must not be forgotten in a recollection of his works. (*Biog. Universelle*, &c.)

DAUCUS, a rather large genus of umbelliferous plants, with hispid fruit, of a somewhat compressed ovate or oblong form, the primary ridges filiform and quite bristly, the secondary ridges prominent, winged, and divided at the edge into a number of fine teeth or hooks. De Candolle enumerates 58 species, chiefly biennials, but it is doubtful whether several of them are not mere varieties of each other. The only one to which general interest attaches is the *Daucus Carota*. This plant, which grows wild all over Europe in chalky soil, is believed to be the origin of our garden carrot, but there is no record of its having first begun to change its hard wiry juiceless wild root for the nutritious succulent carrot of the gardens. De Candolle gives for the range of the wild plant the meadows and pastures of Europe, the Crimea, and Caucasus, whence it has been transported into China, Cochin China, America, and elsewhere. [CARROT.]

DAUDIN, FRANÇOIS MARIE, the son of a receiver-general of finance, was born at Paris towards the close of the eighteenth century. Nearly deprived of the use of his limbs by natural infirmity, he early devoted himself to the study of the sciences, and more particularly to natural history. His memoirs soon found their way into the 'Magasin Encyclopédique' and the 'Annales du Muséum d'Histoire Naturelle,' and he contributed some articles to the 'Dictionnaire des Sciences Naturelles.' His two principal works are his 'Traité d'Ornithologie,' which was never finished, and his 'Histoire Naturelle des Reptiles.' For the first much cannot be said: it is on the second that his fame will rest. Cuvier speaks of the latter as the most complete work on that class of animals which had hitherto appeared. His wife, who is represented as amiable both in mind and person, and as having actively assisted in the composition and illustration of his works, died of consumption; and poor Daudin, whose life, as well as that of his partner, had been long embittered by the deranged state of his affairs, followed her in a few days, before he had attained thirty years of age. He died in 1804, and left no children. (*Biogr. Universelle*, &c.)

DAUNIA. [APULIA.]

DAUPHI'N, the title given to the eldest son of the king of France under the Valois and Bourbon dynasties. The origin of the name has been a matter of some dispute. The Counts of Albon and Grenoble are mentioned first in the ninth century as feudatories of the kingdom of Arles; they afterwards assumed the title of Counts of Vienne, and became independent, like other great feudatories. Guy VIII., Count of Vienne, is said to have been surnamed Le Dauphin, because he wore a dolphin as an emblem on his helmet or shield. The surname remained to his descendants, who were styled Dauphins, and the country which they governed was called Dauphiné. Humbert II. de la Tour du Pin, the last of the Dauphin dynasty, having lost his only son, gave up his sovereignty by treaty to King Philippe de Valois in 1349, after which he retired to a Dominican convent. (Moreri, and the French historians.) From that time the eldest son of the king of France has been styled Dauphin, in the same manner as the eldest son of the king of England is styled Prince of Wales. Since the dethronement of the elder branch of the Bourbons in 1830, the title of Dauphin has been disused. The last who bore it was the Duke of Angoulême, son of Charles X.

DAUPHINE', a province of France, constituting (with the principality of Orange) one of the thirty-two military governments into which that kingdom was divided before the Revolution. It was on the south-east frontier. In its form it approximated to a triangle, having its three sides respectively opposite to the north-east, south-south-east, and west. On part of the north-east side and on the west side it was bounded by the Rhône, by which it was separated from the district of Bresse, in Bourgogne, on the north-east, and from the Lyonnois and Languedoc on the west: on the south it was bounded by Le Comtat de Venaissin and by Provence, and on the remainder of the north-east side by the crests of the Alps, by which it was separated from Piedmont and Savoy. It now forms the three departments of Isère, Drôme, and Hautes Alpes; but the name continues in use, though a different division has been established by law.

Dauphiné is one of the most mountainous districts in France; branches from the Alps traverse it, and some of the loftiest summits of that mountain system are close upon or within its boundary: no other part of France has points equally elevated. Mont Olan is 13,819 feet, a peak west of Maurin 13,107, and Mont Trois Ellions, east of Grenoble, 12,737 feet. The country is watered by a number of streams, which flow into the Rhône, either immediately, or by the Isère, Durance, and other tributaries. The pasturage is excellent, both in the plains and on the mountains; and the wines good, especially the Hermitage, Côte Rôtie, and St. Peray.

Dauphiné was, under the old regime, subdivided into Haut (upper) Dauphiné and Bas (lower) Dauphiné. Haut Dauphiné comprehended the districts of Les Baronies, Le Gapençois, L'Embrunois, Le Briançonnois, Le Champsaur, Le Grésivaudan, and Le Royanès or Royanez. Bas Dauphiné comprehended Le Tricastin, or Tricastinois, Le Valentinois, Le Diois, and Le Viennois. Several of these districts took their names from their chief towns. Dauphiné had a provincial tribunal, or parlement, which held its sittings at Grenoble. This city, which may be considered as the capital of Dauphiné, as well as of the subordinate district of Grésivaudan, is on the Isère: it had in 1832 a population of 24,268 for the town, or 24,888 for the whole commune. The other chief towns are Vienne, capital of Le Viennois (population 13,410 for the town, or 14,079 for the whole commune); Valence, capital of Le Valentinois (population 8898 for the town, or 10,406 for the whole commune), both on the Rhône: Romans, on the Isère (population 7677 for the town, or 9285 for the whole commune); Voiron (population 6924); Montelimar, on the Jabron, which falls into the Rhône (population 5816 for the town, or 7560 for the whole commune); Gap, capital of Le Gapençois (population 4572 for the town, or 7215 for the whole commune); Crest, on the Drôme (population 3895 for the town, or 4901 for the whole commune); Bourgoin, on a small stream which flows into the Rhône (population 3447 for the town, or 3762 for the whole commune); Die, capital of Le Diois, on the Drôme (population 3213 for the town, or 3555 for the whole commune); Nions, or Nyons, on the Aigues, which flows into the Rhône (population 2700 for the town, or 3397 for the whole commune); Embrun, capital of L'Embrunois, on the Durance (population 2392 for the town, or 3062 for the whole commune); St. Marcellin, near the Isère (population 2191 for the town, or 2775 for the whole commune): Le Buis, capital of Les Baronies, on the Ouvèze (population 1886 for the town, or 2180 for the whole commune): Pont-en-Royans, capital of Royanès, on the Bourne, a feeder of the Isère: Briançon, capital of Le Briançonnois, on the Gursane, a tributary of the Durance; St. Bonnet, capital of Le Champsaur, on the Drac, a feeder of the Isère; and St. Paul-Trois-Châteaux, capital of Le Tricastinois, not far from the Rhône.

Dauphiné had two archiepiscopal sees, Vienne (now united with Lyon), established in the second century; the diocese of which comprehended the greater part of Le Viennois, and extended into Le Valentinois, and into Le Vivarais, a district of Languedoc, and included 355 parishes and 10 abbeys; and that of Embrun, established about A. D. 330, which comprehended L'Embrunois and Le Briançonnois, and extended into Provence, and included 400 parishes and one abbey. There were five bishoprics: Valence, established in the third century, the diocese of which comprehended part of Le Valentinois, and extended into Le Vivarais in Languedoc, and included 140 parishes and 4 abbeys: Grenoble, established in the fourth century, the diocese of which comprehended Le Grésivaudan, Le Royanès, and Le Champsaur, and extended into Le Valentinois and into Savoy, and included 334 parishes and 2 abbeys; Die, established A. D. 220, the diocese of which included Le Diois, and extended into Le Valentinois, and into Provence and Le Comtat Venaissin, and included 70 parishes and one abbey: Gap, established in the fifth century, the diocese of which comprehended Le Gapençois, and extended into Les Baronies and into Provence, and included 221 parishes and one abbey; and St. Paul-Trois-Châteaux, the diocese of which comprehended Le Tricastinois, and extended into Provence and into Le Comtat Venaissin, and included 34 parishes and one abbey. Beside these dioceses, those of Lyon (archbishopric) and Belley (in Bugey), extended into Le Viennois; and that of Vaison (in Le Comtat de Venaissin) into Les Baronies. When Expilly published his *Dictionnaire des Gaules et de la France*, A. D. 1764, there were 11 abbeys (including one which had been secularized) and 70 convents, and other religious houses for men, beside 5 houses of the Jesuits, suppressed in 1763; 10 abbeys and 41 convents for women: these establishments contained 1840 men and 1095 women, bound by monastic vows, and enjoyed revenues amounting in the aggregate to 837,200 livres, or nearly 35,600*l.* a year. The Great Chartreuse [Chartreuse] was the most important. There were beside 12 general hospitals, and 10 maladreries or hospitals for lepers. It is to be observed, that Expilly gives a very different account of the number of parishes from that given by Prudhomme in *Le Dictionnaire Universel de la France*, and quoted by us above; they must have adopted different principles in drawing up their respective tables. The archbishop of Vienne had for his suffragans the bishops of Grenoble, Die, and Valence; of Viviers in Le Vivarais (Languedoc), and of Geneva or Annecy, and Maurienne in Savoy: the archbishop of Embrun had for his suffragans the bishops of Digne, Glandèves, Grasse, Vence, and Senés, all in Provence, and Nice in Italy. The bishop of St. Paul-Trois-Châteaux was a suffragan of the archbishop of Arles, in Provence; and the bishop of Gap, of the archbishop of Aix, in Provence.

Since the Revolution, the ecclesiastical constitution of the district has been entirely changed; the archiepiscopal dignity of Vienne has been incorporated with that of Lyon; but the conjoint diocese comprehends scarcely any part of the antient Dauphiné: that of Embrun has been annexed to those of Aix and Arles, but no part of Dauphiné is in the conjoint diocese. The bishop of Grenoble, whose diocese comprehends the department of Isère, is a suffragan of the archbishop of Lyon and Vienne; the bishop of Valence, whose diocese comprehends the department of Drôme, is a suffragan of the archbishop of Avignon; and the bishop of Gap, whose diocese comprehends the department of Hautes Alpes, is a suffragan of the archbishop of Aix, Arles, and Embrun. The other bishoprics of Dauphiné have been abolished.

Before the Roman Conquest this country was inhabited by the Celtic tribes, the Allobroges in the north, and in the south the Segalauni, or Sego-vellauni, and the Tricastini, on the banks of the Rhône; the Tricorii and the Caturiges, among the Alps; and the Vocontii in the intermediate space. The Vocontii, the Segalauni, the Tricastini, and perhaps the Tricorii, were the earliest subdued. The Allobroges had been reduced to subjection by C. Pomptinius, the prætor, a short time before Cæsar's arrival in Gaul; but the Caturiges, in the fastnesses of the Alps, preserved their independence, and attempted with the other mountaineers to impede Cæsar's march when he led his forces out of Cisalpine Gaul to oppose the Helvetii. (Cæs., *Bel. Gal.*, I., 10.) They were probably subdued in the time of Augustus. In the first division of Gaul into four provinces (by Augustus), Dauphiné was included in the province Narbonensis: when, at a subsequent period, Gaul was subdivided into seventeen provinces, Dauphiné was included mostly in Viennensis, partly in Narbonensis Secunda, and partly in Alpes Maritimæ. Among the principal towns under the Roman dominion were Vienna (Vienne) and Cularo, afterwards Gratianopolis (Grenoble), in the territory of the Allobroges; Valentia (Valence), in the territory of the Segalauni; Dea (Die), in the territory of the Vocontii; and Ebrodunum (Embrun), in that of the Caturiges: Vienna, Valentia, and Dea, were colonies. Upon the downfall of the Roman empire, Dauphiné formed part of the kingdom of the Burgundians [Burgundians]; and upon the overthrow of that kingdom became subject to the Franks. It suffered from the ravages of the Saracens in the time of Charles Martel, and formed part of the kingdom of Bourgogne Cisjurane, founded by Boson near the end of the ninth century. [Bourgogne.] In the course of the eleventh century, or even earlier, many feudal principalities were formed in Dauphiné, the more powerful among which were called counties, the others baronies. The counts of Albon acquired the predominance among these nobles, and in course of time gained possession of Le Grésivaudan, Le Viennois, Le Gapençois, L'Embrunois, and Le Briançonnois. Guy VIII., who died about the middle of the twelfth century, was the first who had the title of Le Dauphin; his successors retained it, and insensibly the title of Count of Albon was lost in that of Dauphin of Le Viennois, and the country acquired from this new title of its lords the name of Dauphiné. These Dauphins owed feudal subjection to the Germanic empire, with which the crown of Bourgogne had been united. The Dauphin, Humbert II., by treaties made in the years 1343-49, disposed of his states in favour of the king of France. He nominated as Dauphin, by the treaty of 1343, the second son of Philippe VI. (de Valois), then king of France; so that the common notion that he stipulated that the eldest son should bear the title is erroneous. The territory thus ceded to the French crown comprehended the districts enumerated above as belonging to the counts of Albon: the other parts of Dauphiné are subsequent acquisitions. (Expilly, Prudhomme, *Dict. Universel de la France.*)

DAUPHINE' D'AUVERGNE, a small territory of Auvergne, ceded to Guillaume IV., Count of Auvergne, when deposed from his county by his uncle Guillaume l'Ancien (the elder). Vodable, a small town near Issoire, was the capital.

D'AVENANT,* WILLIAM, was born at Oxford in 1605. His father kept the Crown Inn there, and some have gathered, from Wood's words, hints of a connection having existed between his mother and Shakspeare, who frequented that place of entertainment. He was entered at Lincoln College, Oxford; but it does not appear that he took a degree. He then became page to the duchess of Richmond, and was afterwards in the family of Lord Brooke, the poet. In 1637 he succeeded Ben Jonson as laureat; and in 1641 was accused by the parliament, and forced to retire to France. Two years after, he was knighted by Charles, at the siege of Gloucester; but in 1646 we find him again in France, a Roman Catholic, and in the employ of Henrietta. Being taken prisoner at sea in 1651, he only escaped being tried for his life by the intercession of some friends, among whom are said to have been Milton and Whitelocke. His works consist of dramas, masques, addresses, and an unfinished epic called Gondibert, which he dedicates to Hobbes. The only work for which he is now remembered is an alteration of the Tempest, in which he was engaged with Dryden; 'and marvellous indeed is it that two men of such great and indubitable genius should have combined to debase and vulgarize and pollute such a poem; but, to the scandal of the English stage, it is their Tempest, and not Shakspeare's, which is to this day represented.' (Southey.) He appears to have been the first to mix the English drama with the French heroic play, and to introduce the examples of moral virtue 'writ in verse, and performed in recitative music.' (Dryden.) As he established a theatre as early as 1657, the times might be partly in fault, but his long residence in France had probably influenced his taste. He died in 1668, and was buried in Westminster Abbey. (Wood's *Athen. Oxon.*; *Biogr. Brit.*; Southey's *British Poets.*)

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* Or Davenant: a joke in Wood's 'Athen. Oxon.' renders it probable that the alteration was his own.

DAVENTRY. [NORTHAMPTONSHIRE.]

DAVID. [PSALMS.]

DAVID, JACQUES LOUIS was born at Paris in 1750. In 1774 he went to Rome to study; he returned to France ten years afterwards, and attained considerable reputation, both as an historical and portrait painter. Upon the breaking out of the revolution he threw himself amongst the foremost ranks of the revolutionists. He was the intimate friend of Robespierre, and was appointed manager of all the spectacles and allegorical shows of the republic. He proposed to construct a colossal figure of the people out of the ruins of the statues of the kings, to be placed on the Pont-Neuf, but never proceeded farther than a model, from which, however, the design for the reverse of the republican coin was taken, which was used several years. When Robespierre, anticipating his downfall, expressed himself ready to die the death of Socrates, David, who was present, exclaimed, 'Robespierre, if you will drink the hemlock I will drink it also.' In 1794 he was denounced, and imprisoned, altogether for about a year; but was ultimately liberated, and appears thenceforward to have taken a less prominent part in political matters. He was appointed principal painter to the National Institute. In 1815 he was banished from France with those who had voted for the death of Louis XVI., and took up his abode in Brussels, where he died December 29, 1825. Many anecdotes of his cruelty during the revolution are related by his enemies, but they are not well authenticated; others, in proof of his patriotic magnanimity, are scarcely better established. He appears in truth to have been a man of narrow capacity, and of a warm but not malicious disposition. He is described as being afflicted with a tumour in his jaw, which disfigured his appearance, and so disturbed his utterance that he could not speak ten words in the same tone. To this imperfect speech he added a blustering manner.

David is said to have expressed a wish, that, if an Athenian were to revisit the earth, he might take him for a Greek painter. This is the key to his style, which is a servile imitation of the Greek sculptures; his figures are like statues coloured and put in motion; his drawing is correct, and his composition classical; but his design is constrained and artificial, with a hard outline and harsh colour. The 'Rape of the Sabines' is considered one of the best of his works, which are chiefly at Paris. His portrait of Napoleon is well known.

DAVID'S, ST., a city and parish in the hundred of Dewisland, in the western extremity of Pembrokeshire. It was antiently large and populous, and during the middle ages was the resort of a great number of pilgrims. At present its appearance is that of a poor village, the houses, excepting those of the clergy, being mostly in a ruinous state. The locality is lonely, and the neighbouring district wild and unimproved; but it is still an interesting place as the seat of a large episcopal see, with a fine cathedral and the remains of other magnificent religious edifices. The situation is near the rocky promontory called St. David's Head, on a declivity, a mile from the northern shore of St. Bride's Bay, 16 miles north-west of Haverfordwest, 26 north-west of Pembroke, and 270 west of London. In 1831 the population of the parish, of which the Isle of Ramsay constitutes a part, was 2388. Druidical remains are numerous in the neighbourhood, consisting of sepulchral heaps of stones, barrows, tumuli, holy wells, and some antient fortifications. It is said that a church and monastery were first founded here by St. Patrick about A.D. 470. It is certain however that in the first period after the introduction of Christianity into Britain, three archbishops' seats were appointed, namely, London (transferred afterwards to Canterbury), York, and Caerleon, in the county of Monmouth, and that this last was removed about A. D. 519, in the reign of King Arthur, to Mynyw (called by the Romans Menevia), which received the name of St. David's in honour of the archbishop and saint, by whom the transfer was accomplished. Hence the appellation of *Menevensis*, assumed by the bishops of this see, which was the metropolitan and archiepiscopal see of Wales until A. D. 930, when Sampson, the last of twenty-five archbishops, withdrew to Britanny, and carried with him his clergy and the sacred pall of office. (See a description of this holy ephod by Cressy, l. 35, c. 15.) His successors continued however to administer consecration to the priesthood until the reign of Henry I., when Bishop Bernard acknowledged subjection to the see of Canterbury. The diocese of St. David's contains the entire counties of Pembroke, Caermarthen, Brecknock, and parts of Radnor, Monmouth, Hereford, Montgomery, and Glamorgan. The ecclesiastical corporation consists of a bishop, four archdeacons, a precentor, chancellor, treasurer, nineteen prebendaries, eight vicars choral, four choristers, and several subordinate officers. On the south side of the city, towards the sea-shore, stands the cathedral, the episcopal palace, and college of St. Mary, in ruins, and several other buildings for the residence of the clergy and other appropriate uses. This group occupies a spacious area called The Close, which is surrounded by a lofty wall about a mile in circumference, having four entrances, north, south, east, and west. The principal gate is the eastern, between two massive towers, one sixty feet high. The little river Alan runs through the area, and was crossed by a marble bridge, worn and polished by the pilgrims' feet. Though great damage was done to these edifices by the puritan fanatics of the seventeenth century, their former magnificence, when the episcopal power was equivalent to sovereignty, is apparent in all that remains. The bishop's palace was the most magnificent in the kingdom, the kitchen and cellars being no less admirable than the state apartments. The first cathedral, from its nearness to the sea, was often plundered, and at last was burnt and destroyed by Danish and Norwegian pirates in 1087. The architecture of the present structure, which was erected by Peter, the forty-ninth bishop, is Norman, blended with the richly-pointed Gothic. It is cruciform, 307 feet in length, with a lofty square tower at the west end, a nave, choir, transepts, side aisles, and lateral chapels, one of which is roofed with slabs of freestone. The rood-loft, screen, and roof, which is of Irish oak, are specimens of great architectural skill. The choir is very lofty, containing twenty-eight stalls and a curious moveable pulpit. The bishop's throne is of exquisite workmanship, and resembles that in Exeter cathedral. An altar-tomb, of the son of Owen Tudor, is similar to that of Prince Arthur in the cathedral of Worcester. Numerous antiquarian relics are collected and preserved in the building. In the walls and floor are many sepulchral monuments of the early bishops of the see, as Giraldus Cambrensis, Anselm, Gower, &c. The most antient is that of Rhys ap Gruffyd, prince of South Wales, A. D. 1196; and the most venerated is the shrine of the Archbishop St. David, the tutelar saint of Wales. During many ages it was visited by innumerable pilgrims, among whom were many nobles and kings. William the Conqueror paid his devotions in 1077, Henry II. in 1171, and Edward I. and Queen Eleanor in 1284. The shrine has four recesses for the deposit of the offerings of the pilgrims, who at once relieved their consciences and their pockets. It was ordained by Pope Calixtus that two pilgrimages to St. David's should be accounted equivalent in efficacy to one to Rome: 'Roma semel quantum dat bis Menevia tantum.' The handsome college of St. Mary was founded in 1365 by John of Gaunt. The chapter-house contains a school-room for the instruction of the choristers, and an elegant dining-room, with kitchen and cellars, for the use of the canons when they assemble to audit the accounts of the see. The bishop of St. David's formerly possessed several other palaces and manor-houses in the counties of Pembroke, Cardigan, and Brecknock. The present episcopal residence is at Abergwilly, near the city of Caermarthen, in a noble palace rebuilt by Bishop Burgess. Among his distinguished predecessors in the see have been Dr. Davies, a translator of the English Bible at the Reformation, and Drs. Laud, Bull, Louth, and Horsley.

(Tanner's *Notitia Monastica*, p. 717; Dugdale's *Monasticon*, vol. vi., p. 1301; Fenton's *Pembrokeshire*; Bishop Burgess's *Vindication*, &c., 4to., 1812; *Life of St. David* in *Acta Sanctorum Martiri*, tom. i., p. 39; Brayley and Britton's *Beauties of Wales*, vol. xviii., p. 821-840. The Harleian MS., No. 1294, contains the statutes of the cathedral, and documents relating to its possessions.)

DAVID'S DAY, ST., March 1. St. David, archbishop of Menevia, now called from him St. David's, in Pembrokeshire, lived in the fifth and sixth centuries of the Christian æra; Pits tells us that he died at the age of 146 years. He is said, in the days of the memorable Arthur, to have gained a victory over the Saxons, his soldiers during the conflict, for distinction and as a military colour, wearing *leeks* in their caps. In memory of this fight the Welsh still wear the leek on St. David's Day; and it is to this that Shakspeare alludes in 'Hen. V.,' act v. sc. 1, when he makes Gower upbraid Pistol for mocking 'at an antient tradition, begun upon an honourable respect, and worn as a memorable trophy of predeceased valour.' (See Brand's *Popular Antiq.* 4to., vol. i. p. 86; Brady's *Clavis Calendaria*, 8vo. Lond. 1812, vol. i. p. 228, &c.)

DAVIS, JOHN, a celebrated navigator of the sixteenth century, was born at Sandridge, near Dartmouth in Devonshire, and distinguished himself by three voyages for the discovery of a north-west passage, which he undertook between 1585 and 1587. He discovered the strait, which bears his name, and sailed along the coast of Greenland as far as 72° N. lat., but was not able to approach the opposite coast, on account of the numerous icebergs which lined it north of the Polar Circle. He afterwards made five voyages to the East Indies, and was killed in the last (1605) in the strait of Malacca, by some Japanese, as it is reported. He published an account of his second voyage to the north-west, and of one to the East Indies.

DAVIS'S STRAIT unites Baffin's Bay to the Atlantic, extending between Greenland on the east and Cumberland island on the west, in a northern direction. Its extent is not well determined. Navigators commonly understand by this name the sea extending west of Greenland from Cape Farewell (60° N. lat.) to Disco Island (70° W. lat.) Its narrowest part is near the Polar Circle, where it is about 200 miles across. It is the principal resort of the whalers, the fish being more numerous here than in other seas near the pole. But the immense icebergs, which even in summer line the western coasts of the strait, and the violence of the currents, render these voyages very dangerous. Many of the icebergs rise some hundred feet above the level of the sea, and the whalers which arrive at the end of April or in the beginning of May find the whole strait blocked up by a barrier of icebergs between Cape Walsingham and the Greenland coast. The current, which runs along the eastern coast of Greenland, turns round Cape Farewell and continues along the western coast of Greenland, nearly up to the Polar Circle, where it crosses the strait to Cape Walsingham and continues in a southern direction to Labrador and Newfoundland. By this current the immense icebergs of Davis Strait are carried down to the centre of the Northern Atlantic, where they sometimes are met with as far as 40½ N. lat. The countries on both sides of the strait rise in rocky mountains to a considerable elevation, and exhibit a very scanty vegetation. They are inhabited by the Esquimaux.

DAVISON, SECRETARY. [ELIZABETH.]

DAVITE, a name given to a sulphate of alumina, found in a warm spring which contains sulphuric acid, near Bogota in Columbia. It occurs massive, is of a fine fibrous structure, a white colour, and silky lustre. It is very soluble, and has a very astringent taste.

DAVY, SIR HUMPHRY, was born at Penzance in Cornwall, on the 17th of December, 1778. His ancestors had long possessed a small estate at Varfell, in the parish of Ludgvan. His father was a carver in wood. According to Dr. Paris, one of Sir Humphry's biographers, his father was not remarkable for any peculiarity of intellect; and his mother appears to have been a very respectable woman, who conducted herself, according to Dr. John Davy, the brother of Sir Humphry, so as to gain the regard and good will of every one. At the time of his father's death Humphry was sixteen years old; but his mother lived to witness the rapid progress made by her son in the various departments of chemical science. In speaking of his early days, Dr. Davy admits that many boys have shown precocious indications of talents superior to his; 'there belonged, however, to his mind,' he adds, 'it cannot be doubted, the genuine quality of genius, or that power of intellect which exalts its possessor above the crowd, and which, by its own energies and native vigour, grows and expands, and comes to maturity, aided indeed and modified by circumstances, but in nowise created by them.' It appears that in his early youth he had a vivid and fertile imagination, and was fond of poetry, and his brother has preserved several favourable specimens of his poetic talent. He does not appear to have been fortunately placed at school in the first instance; but he was afterwards, till he was fifteen years of age, with Dr. Cardew, whose school he quitted in 1793. Here he appears to have made considerable progress in learning, but certainly not such as gave any indication of his future eminence.

In the beginning of the year 1795 he was apprenticed to Mr. Borlase, a surgeon and apothecary of Penzance, where he appears to have laid down an extensive plan of study, not merely of the sciences which related to his profession, but the learned languages, mathematics, history, &c. Dr. Davy states that he is not able to give a precise account of the nature and extent of his medical studies; but in the fourth year after he had commenced them he was considered competent by Dr. Beddoes to take charge of an establishment which he had founded at Bristol under the name of the Pneumatic Institution; this was in 1798, when he was scarcely twenty years old.

In the following year Dr. Beddoes published a work, entitled 'Contributions to Physical and Medical Knowledge, principally from the West of England.' Among these were contained 'Essays on Heat, Light, and the Combinations of Light, with a new Theory of Respiration; on the Generation of Oxygen Gas, and the Causes of the Colours of Organic Bodies. By Humphry Davy.' These essays, his first publication, his brother characterizes 'as the bold attempts of an original and enterprising mind,' and observes that they 'bear the stamp at the same time of youth and of genius, in the faults of the one and the redeeming qualities of the other.' Most of the peculiar views developed in these essays were speedily abandoned by the author; and his brother admits that many of the speculations, he might perhaps have said most, were wild and visionary, and adds, what will be readily admitted, 'that the wildest of them are most natural to a young mind just entering on the twilight of physical science, gifted with high powers and a vivid imagination.'

His next recorded experiments relate to the existence of silica contained in various plants, especially in the epidermis of cane; and in 1800 he published in one volume 8vo. a work entitled 'Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide and its Respiration.' In this work, which contained the details of numerous highly interesting experiments, he has minutely detailed the extraordinary effects produced both upon himself and others by respiring nitrous oxide, a gas till then deemed irrespirable. This work also contains an account of some extremely hazardous experiments which he made upon himself in breathing carburetted hydrogen, carbonic acid gas, azote, hydrogen, and nitric oxide; in these dangerous trials his life was more than once nearly sacrificed.

In 1801 Davy came to London, and on the 25th of April he gave his first lecture at the Royal Institution. He began with the history of galvanism, detailed the successive discoveries, and described the different methods of accumulating it; and on the 31st of May, 1802, he was appointed professor. From the year 1800 to 1807 a great variety of subjects attracted his attention, especially galvanism and electro-chemical science; the examination of astringent vegetable matter in connection with the art of tanning, and the analysis of rocks and minerals with relation to geology and to agricultural chemistry. In November, 1807, his second Bakerian lecture was read, in which he announced the most important and unexpected discovery of the decomposition of the fixed alkalis by galvanism, and of the metallic nature of their bases, to which he gave the names of potassium and sodium. Dr. Paris has well observed that 'Since the account given by Newton of his first discoveries in optics it may be questioned whether so happy and successful an instance of philosophical induction has ever been afforded as that by which Davy discovered the composition of the fixed alkalis.' From the year 1808 to 1814, the following papers by Davy were read before the Royal Society, and published in their 'Transactions':—

'Electro chemical Researches on the Decomposition of the Earths; with Observations on the Metals obtained from the Alkaline Earths, and on the Amalgam procured from Ammonia,' read June 30th, 1808.

'An Account of some New Analytical Researches on the Nature of certain Bodies, particularly the Alkalis, Phosphorus, Sulphur, Carbonaceous Matter, and the Acids hitherto uncompounded; with some general Observations on Chemical Theory,' December 13th, 1808.

'New Analytical Remarks on the Nature of certain Bodies; being an Appendix to the Bakerian Lecture for 1808,' February, 1809.

'The Bakerian Lecture for 1809; on some new Electro-chemical Researches on various Objects, particularly the Metallic Bodies, from the Alkalis and Earths, and on some Combinations of Hydrogen,' November 16th, 1809.

'Researches on the Oxymuriatic Acid, its Nature and Combinations, and on the Elements of Muriatic Acid: with some Experiments on Sulphur and Phosphorus,' July 12th, 1810.

'The Bakerian Lecture for 1810, on some of the Combinations of Oxymuriatic Acid Gas and Oxygen, and on the Chemical Relations of those Principles to Inflammable Bodies,' November 15th, 1810.

'On a Combination of Oxymuriatic Gas and Oxygen Gas,' February 21st, 1811.

'On some Combinations of Phosphorus and Sulphur, and on some other Subjects of Chemical Inquiry,' June 18th, 1812.

'On a new Detonating Compound,' Nov. 5, 1812.

'Some further Observations on a new Detonating Substance,' July 1st, 1813.

'Some Experiments and Observations on the Substances produced in different Chemical Processes on Fluor Spar,' July 8th, 1813.

'An Account of some new Experiments on the Fluoric Compounds; with some Observations on other Objects of Chemical Inquiry,' Feb. 13th, 1814.

After the enumeration of these important subjects, we cannot do better than refer to them in the words of his brother and biographer. 'I shall not,' says Dr. Davy, 'attempt an analysis of these papers; I shall give merely a sketch of the most important facts and discoveries which they contain, referring the chemical reader to the original for full satisfaction. After the extraction of metallic bases from the fixed alkalis, analogies of the strongest kind indicated that the alkaline earths are similarly constituted; and he succeeded in proving this in a satisfactory manner. But owing to various circumstances of peculiar properties, he was not able, on his first attempts, to obtain the metals of these earths in a tolerably pure and insulated state for the purpose of examination. On his return to the laboratory after his illness, this was one of his first undertakings. He accomplished it to a certain extent, by uniting a process of MM. Berzelius and Pontin, who were then engaged in the same inquiry, with one of his own. By negatively electrifying the earths, slightly moistened, and mixed with red oxide of mercury, in contact with a globule of mercury, he obtained amalgams of their metallic bases; and by distillation, with peculiar precautions, he expelled the greater part of the mercury. Even now, in consequence of the very minute quantities of the bases which he procured, and their very powerful attraction for oxygen, he was only able to ascertain a few of their properties in a hasty manner. They were of silvery lustre, solid at ordinary temperatures, fixed at a red heat, and heavier than water. At a high temperature they abstracted oxygen from the glass, and at ordinary temperatures from the atmosphere and water, the latter of which in consequence they decomposed.

'The names he proposed for them, and by which they have since been called, were barium, strontium, calcium, and magnium, which he afterwards altered to magnesium.

'The same analogies were nearly as strong applied to the proper earths; and he attempted their decomposition in a similar manner, but not with the same success. By the action of potassium proof was obtained that they consist of bases united to oxygen; but whether these bases were inflammable substances merely, or metallic inflammable substances, was yet a problem, which has since been solved by the labours of Wöhler, Bussy, and Berzelius. Analogy was in favour of the latter inference, as was also the circumstance that the bases of these earths are capable of entering into union with iron; and this has been confirmed by the inquiries just mentioned, as regards the majority of them, all but the basis of silica, which yet remains doubtful.

'The application of these facts to geology was full of promise; and he indulged in the hope that they might serve to explain not only some of the most mysterious phenomena of nature, as earthquakes and volcanoes, and the combustion of meteoric stones and falling stars, but might ultimately lead to a general hypothesis of the formation of the crust of the earth.'

His ideas on this last subject, which he afterwards in great measure relinquished, may be seen in Dr. Davy's Life of Sir Humphry, vol. i., p. 397.

After effecting the decomposition of the fixed alkalis, Davy, reasoning from analogy, conjectured that ammonia might also contain oxygen; and his first experiments were favourable to this supposition; but they contained a fallacy. In his various papers on 'oxymuriatic acid and its compounds' he establishes the views of Scheele respecting its nature, and proves that the reasoning of Berthollet, which had generally been admitted by chemists, was fallacious. He shows that oxymuriatic acid is not a compound, as supposed of muriatic acid and oxygen, but an undecomposed body, to which, on account of its green colour, he gave the name of chlorine. In 1810 he published the first volume of his 'Elements of Chemical Philosophy,' which, although they bear marks of haste, contain much interesting matter: no further portion of this work was printed. His 'Elements of Agricultural Chemistry,' which appeared soon after, is a work containing much useful matter, and replete with sound and practical views of the subject.

One of his greatest inventions was that of the miner's safety-lamp, the first paper in relation to which appeared in the Philosophical Transactions for 1815, and the last in 1817.

Sir Humphry became President of the Royal Society in 1820, and he continued to contribute papers on subjects of great interest for some years. Among the most curious of these, and full of promise as to utility, were those which related to the modes of protecting the copper sheathing of ships; from causes however which even his sagacity could not foresee, the plan proved abortive.

We have thus given a very imperfect and slight sketch of the discoveries of this very extraordinary man and eminent chemist; a list of his works, or at any rate, the principal of them, will be found at the end of Dr. Paris's Life of him. With respect to his philosophical character, the parallel which has been drawn between him and Dr. Wollaston by the late Dr. Henry, while it does justice to both, presents the powers of Davy in a strong and clear point of view, and in the language of one who was deeply versed in the sciences of which he is speaking, and intimately acquainted with the philosopher whose portrait he draws.

'To those high gifts of nature which are the characteristics of genius, and which constitute its very essence, both these eminent men united an unwearied industry and zeal in research, and habits of accurate reasoning, without which even the energies of genius are inadequate to the achievement of great scientific designs. With these excellencies, common to both, they were nevertheless distinguished by marked intellectual peculiarities. Bold, ardent, and enthusiastic, Davy soared to greater heights; he commanded a wider horizon; and his keen vision penetrated to its utmost boundaries. His imagination, in the highest degree fertile and inventive, took a rapid and extensive range in the pursuit of conjectural analogies, which he submitted to close and patient comparison with known facts, and tried by an appeal to ingenious and conclusive experiments. He was endued with the spirit and was a master of the practice of the inductive logic; and he has left us some of the noblest examples of the efficacy of that great instrument of human reason in the discovery of truth. He applied it not only to connect classes of facts of more limited extent and importance, but to develop great and comprehensive laws, which embrace phenomena that are almost universal to the natural world. In explaining these laws he cast upon them the illumination of his own clear and vivid conception; he felt an intense admiration of the beauty, order, and harmony which are conspicuous in the perfect chemistry of nature; and he expressed those feelings with a force of eloquence which could issue only from a mind of the highest powers and the finest sensibilities.' (*Elements of Chemistry*, 11th edition.)

Davy was knighted on the 8th of April, 1812, and on the 11th of the same month he married Mrs. Apreece, the widow of Shuckburgh Ashby Apreece, Esq., eldest son of Sir Thomas Apreece; this lady was the daughter and heiress of Charles Kerr, of Kelso, Esq., and possessed a very considerable fortune. He was afterwards created a baronet. He died on the 28th of May, 1829, at Geneva.

DAVYNE, a silicious mineral found in cavities in some of the masses ejected from Vesuvius; the primary form is a rhomboid, but it occurs in regular hexagonal prisms, with the terminal edges truncated. Its fracture is conchoidal; cleavage parallel to the planes of the hexagonal prism. It is transparent, colour white or yellowish brown. Streak white, lustre vitreous, pearly upon the cleavage planes. Hardness, 5.0, 5.5.; specific gravity, 2.4.

DAWES, RICHARD, was born at Market-Bosworth in the year 1708. His first teacher was Anthony Blackwall, the well-known author of The Sacred Classics, after which he spent some time at the Charter House, and went to Emanuel College, Cambridge, in the year 1725; he was elected fellow in 1731. In 1736 he published a specimen of a translation of 'Paradise Lost' into Greek hexameters, which proved, as he afterwards admitted (*Pref.* to his *Miscellanea Critica*), that he was then very insufficiently acquainted with the Greek language. He became master of the grammar-school at Newcastle-upon-Tyne in 1738; but his disagreeable manners diminished the number of his scholars, and he resigned the situation in 1749. In his latter days his principal employment was rowing in a boat on the Tyne; he died at Haworth 21st of March, 1766. The work on which his fame rests is his 'Miscellanea Critica,' published at Cambridge in 1745, which places him in the same class with Bentley and Porson as a verbal Greek critic. The work is divided into five sections, of which the first contains some emendations of Terentianus Maurus: the second is a specimen of the want of accuracy in the Oxford edition of Pindar; in the third are some general observations on the Greek language, to which are added some emendations of Callimachus; the fourth is a short discussion on the Digamma; and the fifth is devoted to the illustration of Aristophanes. The leading characteristic of the scholarship of Dawes is a proneness to rash generalization; and though it has been termed the scholarship of observation, it must be admitted that Dawes is too apt to form general rules from an insufficient number of passages, and consequently that his system scarcely deserves that title. Hardly one of the syntactical rules which Dawes has laid down has been admitted as unexceptionable; and some of them have been completely overthrown by the number of passages in which they are violated. The authority of the 'Miscellanea Critica' was however so great for some twenty or thirty years after its publication, that many readings supported by MS. authority were altered to meet the canons in that book. The violent animosity which Dawes everywhere shows towards Bentley is only to be accounted for by the universal dislike which that great scholar had incurred during his quarrels with Trinity College, about the time when Dawes was a young member of the university. The best editions of the 'Miscellanea Critica' (which may now be considered as superseded by the advances which Greek scholarship has made during the last thirty years) are those by Burgess, Oxon. 1781, and by Kidd, Cantabr. 1817, in which specimens of his other writings may be seen.

DAWLISH. [DEVONSHIRE.]

DAX, a town in France, in the department of Landes. It is on the south-east bank of the Adour, just to the left (across the river) of the high road from Paris by Bordeaux to Bayonne: 502 miles from Paris, 124 from Bordeaux, and 37 from Bayonne, in 43° 42′ N. lat., 1° 3′ W. long.

This town is situated in a beautiful plain. It is well laid out, and not badly built: the remains of the antient ramparts and of the towers by which they are flanked show traces of Roman work. The waters for which the town is famous rise out of the earth at the bottom of a large basin, about thirty feet square, and two and a half to three feet deep, paved at the bottom and sides, and situated in the centre of the town; they are inodorous and insipid, and so hot that the hand cannot be held in them. The temperature of the water in the basin is about 56° of Réaumur or 158° of Fahrenheit; but a thermometer plunged into the pipe by which the waters enter the basin, rises to 66° of Réaumur or between 180° and 181° of Fahrenheit. The vapour which rises from this basin, condensed by the cold morning air, sometimes forms a dense mist, which envelops the whole town. The waters are not used medicinally; some laundresses use them, and some bakers for making bread. There are however in another part of the town mineral waters which are used in the cure of rheumatism, but not to any great extent. The cathedral is not remarkable. There are an antient episcopal palace, a high school, and an hospital: also an agricultural society, and a small museum of natural history. There is a bridge over the Adour, and some pleasant public walks along the bank of the river. The inhabitants, who in 1832 amounted to 4716, carry on a considerable trade with Bayonne in the produce of the neighbouring districts,—wines, liqueurs, hams, resin, and wool. There is a considerable weekly market for corn and cattle.

Dax is of great antiquity: its mineral waters were known to the Romans, who called it Aquæ Augustæ (Pliny), and Aquæ Tarbellicæ (*Itinerary* of Antoninus), from the name of the tribe (Tarbelli) in whose territory it was situated. It appears to have held a high rank among the towns of Novempopulana. In the writings of the English chronicler, Roger de Hoveden, the town is mentioned under the name of Civitas Akensis: at a later period the name was corrupted into Aqs or Acqs, from which, by the addition of the preposition *de*, we have the modern designation D'Ax or Dax.

After the downfall of the Romans, the town passed into the hands of the Goths and the Franks. From the twelfth century to the year 1451, it was under the English crown. When the English were driven out of Gascogne, Charles VII. united Dax to the French monarchy.

The bishopric of Dax is very antient. It is said to have been founded in the third century by St. Vincent, a martyr, whose body was said to be preserved in a church near the town. Nothing certain is however known respecting the see until A. D. 506, when the bishop, Gratian, assisted at the council of Ayde. The diocese comprehended parts of Béarn and Basse Navarre (Lower Navarre), as well as of the district of Les Landes, in Gascogne. The bishop was a suffragan of the archbishop of Auch. The see is now abolished. Before the Revolution there were several convents in the town and suburbs.

Dax is the chief town of an arrondissement, which comprehends the south-western part of the department: the population of the arrondissement in 1832 was 99,463.

DAY, any astronomical period which depends directly upon the earth's rotation; or the interval between two transits over the meridian of any point in the heavens, real or imaginary. But the only *days* distinguished by that name in astronomy are the *sidereal day*, the *real solar day*, and the *mean solar day*.

The *sidereal day* is the interval between two transits of the same fixed star; that is, the absolute time of revolution of the earth. It is divided into 24 sidereal hours, &c. It begins when the equinox is on the meridian of the place.

The *real solar day* is the interval between two noons or transits of the sun over the meridian. Owing to the unequal motion of the sun, as well as the obliquity of the ecliptic, it is not of the same length at all periods of the year. The *mean solar day* is the average of all the real solar days; it is derived by supposing a fictitious sun to move round the equator, and uniformly in the same time as the real sun moves from an equinox to the same again. The method of adapting the motion of this fictitious body to that of the real sun will be explained in TIME, EQUATION OF.

The civil day, in England at least, is the mean solar day, and begins at midnight; that is, when the fictitious sun is on the invisible part of the meridian. But the astronomical day always begins at the noon of the civil day, and the hours are reckoned forward up to 24. Thus eleven o'clock in the morning on the twelfth of January (civil reckoning) is 23 hours of the astronomical *eleventh* of January. Afternoon, and up to midnight, the astronomical and civil reckoning coincide.

The mean solar and sidereal days are thus related: the mean solar day is 24 h. 3 m. 56 s., 55 of sidereal time; and the sidereal day is 23 h. 56 m. 4 s., 09 of a mean solar day.

The antients almost universally began their day at sunrise, with the exception of the Arabians, who began at noon, and the Egyptians at midnight. Among the moderns, most of the eastern nations begin at sunrise, with the exception of the Arabians, who still begin at noon, and the Chinese, who reckon from midnight. The Austrians, Turks, and Italians reckon from sunrise, and other European nations from midnight.

DAY, THOMAS, was born at London in 1748. His father held a place in the Custom House, and died when he was a year old, leaving him a fortune of 1200*l.* a year. He received his school education at the Charter House, and at the age of sixteen was entered a gentleman commoner of Corpus Christi College, Oxford, where he remained for three years, but left without taking a degree. He then spent some summers in travelling through and residing in France and other parts of the continent. He had already adopted certain strong and peculiar opinions on the subject of education, holding, apparently, on the one hand that the common mode of education was wholly vicious, and on the other, that by a proper education there was scarcely any thing that might not be accomplished. About the year 1769 he proceeded to put his theories to the test of a bold experiment, by selecting from the foundling hospital at Shrewsbury two girls of twelve years of age, with the design of rearing them according to his own notions, and then making one of them his wife; and although this speculation failed in the main point, its eccentric author never having married either of his protegées, both the girls, with the portions he gave them, obtained husbands, and by the propriety of their conduct through life did honour to his training. In 1778 Mr. Day married Miss Milnes, of Yorkshire, a lady similar to himself in her tastes and opinions, and having a fortune as large as his own. The following year he was called to the bar; but he never practised. Meanwhile, in 1773, he had made his first appearance as an author, in conjunction with his friend Mr. Bicknell, in a poem entitled 'The Dying Negro,' a production which is said to have had a considerable share in exciting the public feeling against the atrocities of the slave-trade. In 1776 he published another poem, called 'The Devoted Legions,' being an attack upon the American War. It was followed the next year by another on the same subject, entitled 'The Desolation of America.' After this he published several political pamphlets in prose; namely, in 1784, 'The Letters of Marius; or Reflections upon the Peace, the East India Bill, and the Present Crisis,' and 'A Fragment of a Letter on the Slavery of the Negroes' (in the United States); in 1785, 'A Dialogue between a Justice of Peace and a Farmer;' and in 1788, 'A Letter to Arthur Young, Esq., on the Bill to prevent the Exportation of Wool.' In 1783 appeared the first volume of the work by which he is now principally remembered, his 'History of Sandford and Merton;' the second volume was published in 1786, and the third in 1789. The object of this fiction is to illustrate and recommend the views of the author on education and on human nature generally; and it is a good picture of both his intellectual and his moral character. Its freshness and vigour, and the strain of disinterestedness and philanthropy that pervades it, have a charm, especially for the young; but the narrowness of the writer's views makes it useless for any practical purpose, and nearly equally valueless as a piece of philosophy. He is one of those speculators who look at the wide and varied field of human affairs through an oaten pipe. Day is also the author of another shorter work of fiction, called 'The History of Little Jack.' He was killed 28th September, 1789, by a kick from a young horse, which he was training upon some new principle; for his schemes for the improvement of education embraced the inferior animals as well as his own species. It ought to be added, however, that a spirit of uprightness and disinterestedness, and a scorn of everything mean, marked the conduct not less than they do the writings of this able and good man, but not very profound thinker. (Chalmers, and *Biog. Brit.*)

DEACON, an ecclesiastical term of Greek origin, from Διάκονος (Diáconus, literally, *a servant*), introduced into the Saxon vocabulary, and continued in use to the present time.

It designates one of the *orders* in the Christian priesthood, the lowest of the three—bishops, priests, and deacons.

The first institution of the order is particularly set forth in the sixth chapter of the Book of Acts. The administration of the charities in the Church of Jerusalem was complained of as partial by the Grecian converts. The apostles, in whom the administration had been vested, thought it expedient to divest themselves of this duty, and to devolve it on other persons, that they might devote themselves to prayer and to the ministry of the word. Seven persons were selected for the office, and by prayer and the imposition of hands ordained deacons.

It appears by the first Epistle of St. Paul to Timothy, that there were deacons in other Christian churches, and probably in all where such an officer was needed. He gives instructions (chap. iii. 8-13) respecting the character which became persons who should be admitted into the office. See also *Phil.* i. 1. There were also deaconesses in the primitive church, one of whom, Phœbe, is mentioned *Rom.* xvi. 1. This female officer may be traced to the eleventh or twelfth century.

The peculiar office of both deacons and deaconesses was to attend to works of mercy, to be the administrators of the alms of the more opulent members of the church.

In the English church the name continues, and the peculiar form of ordination, but the peculiar duties of the office seem to be lost sight of. In fact the Poor Laws, by creating certain civil officers whose duty it is to attend to the necessitous, have rendered the services of the deacon in this his characteristic capacity less necessary.

In some dissenting communities there are deacons who still discharge the duties for which the office was instituted, collecting the alms of the people at the sacrament, and distributing them among the poor. But they are always laymen, or persons who have not gone through the forms, generally few and slight, of ordination, as practised among the dissenters.

There is a form for the ordination of deacons in the English church: some clergymen never take priests' orders. It appears by the Rubric that a person in deacon's orders is empowered to read publicly the Scriptures and homilies, to catechise, to preach when licensed to do so by the bishop, and to assist a priest in divine service, and especially in the Communion. When contemplated in the light in which this form places him, he appears as an assistant to a priest, for he is to seek out the sick and poor and report them to the priest, and in the absence of the priest to baptize. This latter permission has led to the introduction of the performance of other ecclesiastical duties, namely, the celebration of matrimony, and the burial of the dead. In fact the deacon performs all the ordinary offices of the Christian priesthood, except consecrating the elements at the administration of the Lord's Supper, and pronouncing the absolution.

A person may be ordained deacon at twenty-three. He may then become a chaplain in a private family; he may be curate to a beneficed clergyman, or lecturer in a parish-church, but he cannot hold any benefice, or take any ecclesiastical promotion. For this it is requisite that he take priest's orders.

DEAD SEA, called also Lake Asphaltites, is situated in the Holy Land, or Palestine, between 31° and 32° N. lat. and 36° and 37° E. long. It extends nearly north and south about 50 miles, and measures about 25 miles where widest, but it narrows considerably towards its extremities. The Arabs call it Bahr Lot or Lud, and those of them who inhabit the adjacent country sometimes conduct the traveller to a pillar coated with asphaltum, which they pretend is the pillar of salt into which Lot's wife was transformed, according to the account of the sacred volume. The towns of Sodom, Gomorrah, Adama, Seboyn, and Segor, which were swallowed up by its waters, are said to have been on its western bank, where some few ruins occur.

The water of the lake is pungent and bitter. Asphaltum floats on its surface, and covers also the whole of the extent of its shores, and likewise the ruins still existing upon it. The lake throws up on its banks pieces of petrified wood and porous stones in a calcined state. The river Jordan falls into it at its northern extremity, but the lake has no outlet. From its northern extremity a sandy plain extends along the Jordan; but on all other sides it is enclosed with masses of bare stones and rocky hills, on which only small tufts of certain shrubs grow, from which a balsam is extracted. The deep but narrow valleys which traverse these masses of stone are inclosed by high mountains, and the whole presents a dismal and sombre sight. At the most southern extremity begins a stony valley, which traverses Arabia Petræa nearly in a southern direction, and terminates at the gulf of Acaba, the north-eastern arm of the Red Sea. The northern part of this waterless valley is called El Ghor, and the southern El Araba. On both sides of it extend the high and stony table-lands of Arabia. (Count Forbin's *Travels in Greece, Turkey, and the Holy Land.*)

DEAF AND DUMB. The subject of deafness and its consequences has not received that degree of attention which its importance deserves. Few persons have an idea of the extent to which it prevails, and fewer still form correct notions of the amount of deprivation under which a totally deaf person labours. Till institutions for the instruction of the deaf and dumb began to multiply, and thus to attract public notice and sympathy towards this unfortunate class of persons, it was believed that the deaf and dumb formed a very minute fraction of the population; and a very few years ago one of the highest dignitaries of the Church of England assured a gentleman who applied to him on behalf of the deaf and dumb in his province, that during his long life he had never heard of more than two persons in this melancholy condition. Perhaps one cause of the general want of knowledge on this subject is the incapability of the deaf and dumb to give utterance to their own deficiencies; the very nature of their deprivation prevents their making it known and obtaining relief: thus generations have lived and died in wretchedness and obscurity.

The most complete tables which have been formed for showing the proportion of deaf persons to the rest of the population are contained in the 'Third Circular of the Royal Institution for Deaf Mutes' at Paris. From this circular the following table is taken, which shows not only the extent, but the universality of the calamity, and the proportion which the deaf bear in different countries to the whole community.

Countries.	No. of Deaf and Dumb.	Proportion to Population.
Portugal	2,407	1 in 1585
Spain	7,255	„ 1585
France	20,189	„ 1585
Italy	12,618	„ 1585
Switzerland	3,976	„ 502
Grand Duchy of Baden	1,983	„ 559
Würtemberg	1,250	„ 1240
Bavaria	2,908	„ 1388
Austria	16,684	„ 1585
Prussia	8,223	„ 1548
Saxony	883	„ 1585
Grand Duchy of Saxe Weimar	142	„ 1585
Electoral Hesse	400	„ 1375
Duchy of Nassau	210	„ 1428
Principality of Lippe Schaumburg	16	„ 1585
Hanover	946	„ 1585
Duchy of Brunswick	176	„ 1170
Duchy of Oldenburg	151	„ 1585
Frankfort	47	„ 1585
Hamburg	86	„ 1585
Bremen	31	„ 1585
Belgium	2,166	„ 2847
Holland		
Denmark	1,260	„ 1714
Sweden and Norway	2,397	„ 1585
Russia	27,834	„ 1585
Poland	2,334	„ 1585
Great Britain, England	7,570	„ 1585
Scotland	1,324	„ 1585
Ireland	3,500	„ 1714
United States of America	6,000	„ 2000

According to this statement, the general accuracy of which has been repeatedly confirmed in various districts by special returns, the proportion of deaf persons to the population of Europe is 1 to 1537. The United Kingdom contains 12,400, or 1 to 1622 of the population.

Deafness occurs in every degree, in some cases only amounting to an insensibility to very sharp notes. Many people cannot hear the squeaking of the bat and the mouse. By holding the nose, inflating the ears, and ceasing to breathe, the ear is rendered more open to base notes, and more deaf than it naturally is to sharp notes. Dr. Wollaston constructed a small organ, whose notes began where the sharp notes of ordinary instruments end; the notes of his organ increased in sharpness till they became inaudible, though he was certain that it continued to give sound from feeling the vibrations equally with the lower notes. He thus found that some people could hear seven or eight notes higher than others, and that children could generally hear two or three notes higher than grown-up people. In some persons the accuracy of the ear is merely impaired in distinguishing faint sounds, and sounds somewhat similar; instances of this kind are particularly evident in infants, whose first attempts at speech are a very remote similarity to the sounds they hear, and become more perfect as their ear is educated, and in some cases remain imperfect through life, in consequence of defect in the organs of hearing. All imperfections of speech do not arise from imperfect hearing: an indistinct articulation may result from various other causes, from carelessness, from defective organs of speech, or an imperfect formation of those organs, from irregular respiration producing hesitation, and in some instances proceeding from nervousness. The principles which regulate utterance have been practically considered and acted upon by Mr. Cull, to whose pamphlets on 'Impediments of the Speech,' and on 'Stammering,' reference may be made with satisfaction by those persons whose utterance is defective. The discovery of these principles is however due to Dr. Arnott. Up to the period of the publication of his 'Elements of Physics,' in 1827, scientific and regular practitioners had no cure for stuttering. This work should be consulted by all those persons who wish to ascertain the causes, moral or physical, which tend to produce defective speech.

By total deafness is meant that state in which the organs of hearing are as insensible to sound as any other part of the body. To persons in this condition, sound is a mere vibration which can be felt, but very imperfectly distinguished. Yet persons who are generally considered as totally deaf, are not all equally so. There are cases where the firing of a gun is unheard though immediately near the deaf person, and others where a gun fired at a quarter of a mile distant is heard, and distinguished from the falling of a heavy weight upon a boarded floor. In some instances, the human voice in a great variety of its louder single intonations can be recognized, though the loudest reading or the highest pitch of a speaker would make no impression. Dr. Itard, of the Royal Institution for the Deaf and Dumb, at Paris, considers that more than half of the pupils received into that Institution are of that class who hear the least; about the same proportion would be found in the English Institutions. The other half comprise cases more or less of imperfect deafness, an expression which must by no means be confounded with imperfect hearing. In all these conditions of deafness, the person is consequently *mute*, or *dumb*. Hence the expression *Deaf-Mute*, as used in the continental languages, and *Deaf and Dumb*, as used in England and America, to designate a person so deaf as to be inaccessible by the ordinary means of lingual communication, and unable to make known his thoughts, wishes, and feelings, in our conventional tongues. As articulation can only be acquired by those who hear, it follows that according to the condition of the power of hearing, will be, *ceteris paribus*, the distinctness of articulated sounds. Hence in the instruction of deaf-mutes, it is generally found that those pupils who distinguish the different tones of the human voice most correctly become the best speakers of the artificial pronunciation, which is taught in some of the institutions for the deaf. There are certainly cases where the articulation of a totally deaf person is pleasanter to hear, softer and less monotonous, than in some instances of imperfect deafness, but these depend upon other causes, as the natural tone of the voice, the attention of the pupil, or the care of the instructor.

In cases where deafness is not congenital, but supervenes at a period after articulation has been acquired, at the age for instance of four or five years, the power of speech is gradually lost, the voice becomes monotonous, and unless the practice of speaking is continued, the power of speech is lost almost as completely as though it were a case of original deafness. A case of this kind has come under our notice, in which the patient lost his hearing before he was five years of age. At thirteen years of age, his pronunciation of the words *hat*, *coat*, *book*, was, as if they were written *hat-a*, *coat-a*, *book-a*. His knowledge of things had been kept up entirely by vocal practice, for he knew nothing of written words or writing. A case somewhat analogous to this, is that of a nobleman now living, who was an officer in the battle of Waterloo; his auditory nerve was destroyed by the concussion of the air, from the bursting of a shell, or from the report of a cannon. He is now totally deaf, and has consequently lost all control over his voice, which has become discordant, and difficult to be understood, even by those who are accustomed to associate with him. A similar instance is mentioned by an American writer, 'in which entire deafness, taking place at the age of eighteen, so affected the articulation, that the individual was no longer intelligible, even to his friends.'

The importance of an inquiry into the causes of deafness, induced the directors of the institution at Paris to issue circular letters, containing a series of questions, as follows, addressed to the parents of their pupils.

1. Was the child born deaf, or has he become so since his birth?
2. In the first case, what circumstances preceded, accom-

panied, or followed his birth? In the second case, at what age was he found to be deaf?

3. Since the time of his birth till that when he lost his hearing, has he suffered under any illness, or met with any accident?

4. Is the loss of hearing to be attributed to this illness, or this accident?

5. Independent of deafness, has he any other infirmity?

6. In this case, was this infirmity anterior or posterior to the deafness, and for how long?

7. Had the child spoken before he lost his hearing?

8. How many children are there in the family, and among them how many deaf-mutes?

9. Are the father or mother deaf and dumb, or have they any other disease?

10. What was the age of the father and mother at the time of the child's birth?

11. What is their occupation?

12. Is the residence of the parents in a flat, mountainous, or marshy country? Is it exposed to humidity, or to any other peculiar atmospheric influence?

Lastly, The parents or the friends of the child are requested to give all the particulars which it is possible to furnish explanatory of the causes of deafness.

The following is a brief notice of the result of this inquiry. Out of 102 children whose parents furnished the required information, 52 were born deaf, 37 became so after birth, and of the remaining 13 no positive information could be obtained. Of the 37 who became deaf after their birth, 7 lost their hearing during the first year, 13 in the second, 7 in the third, 1 in the fourth, 5 in the fifth, and 4 in the eighth year of their age. On examining into the causes of the deafness of these children, 8 cases were found to arise from violent convulsions during the period of dentition or from fright; in 10, deafness supervened upon epidemic fevers—cerebral, nervous, scarlatina, inflammatory, putrid or catarrhal; 2 cases followed measles, 6 arose from verminous diseases, 1 from a deposit of matter under the ear, 1 from a violent sore throat, 1 from a fall, 1 from a cold, and 1 from ophthalmia caused by a scrofulous habit; 7 cases of deafness were attributed to virulent diseases, of which the parents could not explain the nature; lastly, four children who were not born deaf lost their hearing without it being possible to refer the loss to any illness of a serious nature. Of these 102 deaf-mutes, 21 belong to families in which there are other children afflicted with the same infirmity; 9 families contain each two deaf and dumb children among two, three, four, five, six, and eight; 7 families have each three deaf-mutes, out of three, four, seven, eight, and twenty-six children; 3 families contain each four, out of four, seven, and ten children; 1 family has five deaf and dumb children out of eight, and there is 1 family which out of ten children contains seven deaf-mutes: with the exception of one brother and one sister who lost their hearing after birth, all these children, belonging to families where there are several deaf mutes, are afflicted with congenital deafness.

Many cases of deafness are attended by circumstances which deserve to be especially recorded. One deaf-mute from birth had a maternal great-grandmother who was afflicted with the same malady; another child, who lost its hearing at the age of four years, is the issue of a father who was also affected with deafness at the age of seven years, and there are several other parents who have laboured under the same infirmity. In the family which numbers 7 deaf-mutes out of ten children, the father had an aunt who was deaf from birth; in another family, which contains 2 deaf-mutes, the sister of the father married with the brother of the mother has five male children, of whom three are afflicted with congenital deafness. In one family the father has been twice married; by his first wife he had two children who can hear; by his second he has one daughter born deaf and dumb. In a second family the father has also contracted two marriages; he had three deaf and dumb children by his first wife, and four children who hear by his second. In the family which contains 3 deaf-mutes out of twenty-six children, the father has been married four times; his last wife, who is affected with goître, has had five children, three of whom are deprived of hearing. Lastly, in the family which, out of eight children, numbers five deaf and dumb from birth, all the five were born in a damp house, where the persons who had formerly resided had three children, of whom two were deaf and dumb.

We are enabled to compare the above results with the results of an inquiry into a nearly similar number of cases obtained at one of the English institutions, the Yorkshire Institution for the Deaf and Dumb. The details in the latter case are upon 110 pupils, and while they, in many respects, verify and corroborate the evidence already before us, in some important particulars there is considerable variance. It appears that all ordinary means are used to obtain correct statistical data at the Yorkshire Institution, not only on the physical influences which cause deafness, but also on the effects of moral and intellectual culture. A sufficient number of years has not yet elapsed since the institution was established to enable us to draw any important inferences from the facts hitherto recorded. From November, 1829, to August, 1835, 110 pupils were received into the Yorkshire Institution: of this number 75 were born deaf, 26 became so after birth, and of the remaining 9 no accurate information could be obtained. The statements as to the time at which deafness was first perceived in the 26 above mentioned are very vague, but it is certain that a very large majority became so under the age of three years, and that only one occurred at five years of age. Respecting the diseases on which deafness followed, the information is full and complete, so far as the observation of parents and the attestation of the medical practitioners of the various families could make it. In 9 cases the deafness is reported to have arisen from hydrocephalus and other affections of the brain, as inflammation, brain-fever, &c.: in 5 from general fever, scarlet-fever, &c.; in 4 from measles; in 3 from convulsions and other fits; in 2 from inflammation of the lungs; in 1 from cold; and in 3 cases from diseases which were unknown, or on which the friends of the children had no positive knowledge. Seventy-four of the 110 cases are in families where there are only these single instances of deafness, the remaining 36 belong to 27 families, and these 27 families contain 68 cases of deaf and dumb offspring. Seventeen of them have each 2 deaf and dumb; seven have each 3; two have each 4; and one has 5, making in all 68. Of these 27 families

1	has	5 d. d.	(5)	out of	9	children;	(9)
2	have each	4	(8)	„	7	„	(14)
3	„	3	(9)	„	7	„	(21)
3	„	3	(9)	„	6	„	(18)
1	has	3	(3)	„	5	„	(5)
1	„	2	(2)	„	10	„	(10)
3	have each	2	(6)	„	8	„	(24)
1	has	2	(2)	„	7	„	(7)
3	have each	2	(6)	„	6	„	(18)
2	„	2	(4)	„	5	„	(10)
5	„	2	(10)	„	4	„	(20)
1	has	2	(2)	„	3	„	(3)
1	„	2	(2)	„	2	„	(2)
27			68				161

This statement presents us with 27 families containing 161 children, of whom 68 are deaf and dumb. It has been mentioned that 26 of the 110 cases now under consideration are the effects of accident or disease; 24 of these instances may be somewhat positively concluded to be in families free from congenital deafness, from the fact that these are the only instances known in the families. The other case of two children, making the 26, is that of a brother and sister who are said to have become deaf after birth, in each case from inflammation of the lungs at two and a half years of age; it is proper to remark that in this instance both the father and the mother of the two children died of consumption at an early age, and that both the children are subject to pulmonary complaints and other affections indicative of disease.

Out of the total number of children that have been received into the Yorkshire Institution 8 were subject to goître; 7 to other scorbutic tendencies; 5 to fits; 2 to partial paralysis; 2 to consumption, and 8 were of otherwise delicate constitutions; three have died, 1 of inflammation of the lungs, one of dropsy supervening on scarlatina, and one of a very gradual consumption. In five families idiocy exists; in several, goître is found in the parents; in 19, one or both the parents died early, or before middle age; in several, deafness exists in collateral branches of the family; in one case, where the father is deaf and dumb, he has two children who can hear, and one who is deaf and dumb. In another, the family consists of four children, two of whom are deaf and dumb, and twins. The number of families employed in agriculture in the district to which the operations of the institution extend is 62,377; employed in trade and manufactures 140,856; other families 73,333. Of the 110 pupils 63 were from mining and manufacturing districts, and chiefly from large towns, and 47 were from agricultural districts. Of these 110 pupils 20 were found to be of decidedly superior intellectual powers; 61 were of ordinary talents; 19 were inferior in mental endowments, and 10 were very low in intellect—compared even with those of the next grade, but not so low as to be considered idiots, for even these were able to connect simple ideas in writing, to comprehend all ordinary subjects connected with their daily exercises and wants, and were capable of moral improvement. In each of these *ten* instances it is remarkable that causes exist which partly account for this intellectual barrenness; in one instance the child and both the parents are unhealthy; in another there exists paralysis of one entire side of the body, and doubtless of one side of the brain, as the child is of a very active temperament; in the next case, there is a general feebleness of the constitution (in this case both the parents are healthy, and a very large family of children are remarkably so); in two instances the children are subject to fits, in another case the child is a species of dwarf, being physically and mentally undeveloped, remarkably good humoured, and the moral sense good, considering the unfavourable circumstances under which the child was brought up; in the ninth instance the pupil laboured under St. Vitus's dance, and scorbutic affections; and in the tenth, the mother has goître, the father is dwarfish, and one of the brothers is an idiot.

Such are some of the results which have been obtained at one institution, and we now submit the form in which the information is recorded. This form embodies particulars which, from the comparatively short existence of the institution, cannot yet be completed, and it is probably capable of improvements which in due course will present themselves. At the same time it is a document which, as far as it goes, is satisfactory, and which even in its present form may serve as a model till something better is suggested. The book in which the details are kept is divided into columns varying in width according to the information to be written in them. The heads are as follows:—No. of Case, Name of Child, Description and Circumstances of Parents, Moral and Physical Habits of Parents and Family, Residence, Physical Character of the District, No. of Family, No. of Deaf and Dumb, Age of Pupil, When Admitted, Born Deaf or became so, and when, Under what Circumstances became Deaf, If otherwise Diseased and its Nature, No. of Years at School, Intellectual Character, Moral Character, Why left School, Deafness in Family, Cases of Consanguinity existing between Parents before Marriage, Business on leaving School, Additional Remarks.

The only statistical document which the publications of the London Asylum for Indigent Deaf and Dumb Children furnish is the following very important one, extracted from their Report for June, 1833, by which it is shown that 20 families, containing 159 children, number 90 deaf-mutes.

Names.	Parents' Description.	No. of Children.	No. of D. & D.
Mary Martin	Father a labourer	10	7
James Wm. Kelly	do. a porter	8	7
Mary Aldum	do. a broadcloth weaver	12	6
William Coleman	Mother a widow	11	5
David Thompson	Father a smith	10	5
James Cousens	do. a brickl.'s labourer	8	5
George Franklin	Mother a widow	8	5
Silas Vokins	Father a labourer	7	5
Thomas Barnes	do. a cobbler	6	5
Thomas Pounceby	do. a dyer	12	4
Henry Tatler	do. a working jeweller	10	4
Abrm. Murgatroyd	do. a cloth weaver	9	4
William Baynes	do. a school-master	8	4
Mary Lovegrove	do. a labourer	8	4
Elizabeth Cherry	do. a watch-finisher	7	4
William Cockton	Mother a widow	6	4
Robert Mortimer	Father a cloth weaver	7	3
Francis Hancock	do. a small farmer	6	3
Susannah Rye	Mother a widow	3	all 3
Eliza Fox	(An orphan)	3	all 3
		159	90

From a circular issued by the National Institution for the Deaf and Dumb of Ireland, we are enabled to extract some interesting statistical details which other institutions do not supply; they are stated as follows:—'We have kept an accurate registry as to all the circumstances of 489. These belonged to families in which there were 2020 children, of whom 563 were deaf and dumb. Of the above 489 applicants, 279 were boys, and 210 girls: 423 were born so, and 66 became deaf after birth, from various diseases and accidents, such as falls, blows, kicks of animals, colds, measles, fevers, worm-fevers, abscesses, palsy, &c. Ninety-seven were not wholly deaf, though so much so as to be quite incapable of learning in the common way; and all those born deaf, as well as almost every one of such as had lost their hearing in early childhood, as a consequence of surdity, were totally dumb. The following scale will show the number of cases of deaf-mutes in different families of from 1 to 12 children:—

Total Number of Children in the Family.	Number of these Children Deaf and Dumb.				
	1	2	3	4	5
1	39				
2	39	6			
3	70	8	1		
4	53	8	2		
5	61	14	8		
6	45	4	3		
7	30	7	7	1	1
8	17	7	1		
9	5		1	1	
10	4	1			
11	1				
12	1				

Number of Families in which these proportions occurred.

'In one case twins were born deaf and dumb. Several had minor defects of sight in one or both eyes. Four (3 in one family) could not see during sun light; 3 had lost 1 eye, and 5 were blind of both; about a dozen had epileptic fits; very many were afflicted by scrofula (king's evil); and about 12 or 13 have been since ascertained to be more or less idiotic. To show the poverty of the families the following classification is sufficient:—in 115 cases the parents were labourers; in 79, small farmers; in 32, servants; in 28, weavers; (in 13 unknown;) in 11, shoemakers, blacksmiths; in 10, tailors, soldiers; in 9, carpenters; in 8, petty grocers; (7 were foundlings;) in 6, washerwomen; in 4, beggars, clerks, fishermen, masons, pensioners, policemen, seamen, shopkeepers, tradesmen; in 3, bakers, carriers, house-painters, schoolmasters, tide-waiters, woollen-drapers; in 2, butchers, confectioners, gardeners, innkeepers, hackney-coachmen, hucksters, millers, publicans; in 1, bleacher, brass-founder, broker, brogue-maker, cap-maker, chandler, chimney-sweeper, constable, cooper, cork-cutter, corn-merchant, currier, cordwainer, dairyman, dancing-master, dyer, flax-dresser, game-keeper, harness-maker, mate, millwright, navy-officer, oyster-seller, pedlar, plasterer, postman, postmaster, sawyer, spinner, surveyor. Of these almost exactly one-half were residents in towns, and one-half in country places.'

The 'Thirteenth Report of the American Asylum at Hartford,' contains many interesting particulars on the statistics of deafness. Since the commencement of that institution in 1819 to 1829, 279 pupils had been received, 157 males, and 122 females. 'Of these, 116 were born deaf, and 135 lost their hearing in infancy or childhood, by disease or accident; with regard to 28, it is uncertain, or doubtful, in what way this misfortune befel them. It appears from this that a somewhat greater proportion have become deaf, and consequently dumb, by some adventitious cause after their birth, than by any constitutional defect. So far as accurate information has been obtained among those who have become deaf by disease or accident, 15 became so quite in infancy; 27 before 1 year of age, 58 between the ages of 1 and 4 years; 14 between 4 and 5 years, and 9 between 5 and 7 years of age. Among the causes producing this calamity, 25 cases are attributed to the scarlet fever, 16 to various kinds of fever not defined, 7 to the canker-rash, 5 to the measles, 2 to an inflammation of the brain, 1 to the small-pox, 1 to the hooping-cough, 1 to palsy, 1 to the discharge of cannon at a military review, and 1 to sudden falls. In very many cases it has been found impossible to procure satisfactory information. The 279 pupils have come from 247 families, 47 of which have contained more than 1 deaf and dumb child; 20 families have each contained two; 4 families, three; 7, four; 4, five; 2, six; and seven. In one family the father is deaf and dumb, and also four of the children. In another, the father and two children are deaf and dumb. These are the only instances in which either of the parents of the pupils has laboured under this defect, while in several other cases which have come to our knowledge, one or both of the parents have been deaf and dumb, yet their children have heard perfectly well; so that it does not appear that the malady is always an hereditary one. It seems rather to be found among certain families and their collateral branches. Thus two of the pupils (sisters) have had fourteen kinsfolks deaf and dumb, the whole sixteen being descended from the same great-grandmother; while what renders this fact the more singular is, that their common ancestress, all her children, and all her grand-children, possessed the faculties of hearing and speech.'

In Bébian's 'Journal de l'Instruction des Sourds-Muets,' No. ii., p. 117, 118, it is remarked that the canton of Vaud, in Switzerland, containing 122 parishes, presents a remarkable phenomenon. In 67 parishes there is not a single deaf-mute; in the other 55, there are 152, which is about one in every hundred of the population. In the district of Moudon there are 43 deaf-mutes among 6602 inhabitants; in Payerne only 25 in 6095; in Eaubonne 20 in 9688; and in Vallée, 12 in 3938. The physical causes of this difference are unknown, but of 152 deaf-mutes 66 were found capable of instruction. Most of the other 70 are also afflicted with cretinism; age and diseases of various kinds unfit the others for instruction. Almost all are the children of poor parents, who could not contribute to the expenses of education.

On the origin and transmission of peculiarities, whether resulting from conformation or from disease, there is a large assemblage of facts in the writings of Blumenbach, Lawrence, Esquirol, Gall, Spurzheim, the Combes, and others; sufficient perhaps to enable the inquirer to come to some general conclusions, and to point towards laws which influence the physical condition of man. The more the inquiry descends into detail, the greater are the difficulties which attend it. The physical history of deafness is an almost unexplored field for research. Of late years, the writings of Deleau and Itard have made known some facts calculated to assist in the diffusion of correct views on this malady, and their experience has led to some results favourable to the sufferers; but at the same time it is highly desirable that facts should be collected wherever they can be obtained, as these alone can lead to the formation of correct opinions and the suggestion of remedial measures. The bad effects of in-breeding are known to all who are engaged in the rearing of horses and other animals; it has also produced some melancholy instances in the human race. To these it may be added that many cases of deaf-mutes known to the writer of this article, are the offspring of first-cousins and of other marriages of near consanguinity. Should the offspring of such marriages be frequently found to labour under physical defects, may we not safely infer that a natural law is transgressed, and that it is followed by its peculiar punishment? We conclude this portion of our subject with a powerful conviction that public institutions should unite their efforts for the common improvement of society; that they should obtain every information directly or indirectly bearing upon those cases which come under their observation; and from time to time bring their details into one general form. Connected with a system of registration, very ample details might be obtained. In the operation of such a system every case of physical defect observed at the birth of a child, or soon after, should be recorded; and at stated periods the heads of families should report on any deficiencies to which their children have become subject, whether arising from an original but previously unnoticed infirmity, or derived from accident or disease. Thus all cases of physical defect, whether organic or functional, all instances of mental imbecility, would be accumulated, and such a body of facts would prove in no small degree useful to society.

Before the practicability of instructing the deaf was known, it was generally supposed that instruction by means of language was limited to those who could hear. The idea never occurred, or if it did, was as instantly rejected, that the deaf man was not, by reason of his deafness, excluded from the means of acquiring knowledge. It was not till the sixteenth century that the possibility of carrying forward the process of education in the absence of all hearing, received any serious consideration. Even at the present day there are many persons who are at a loss to conceive not only how abstract notions, but even how the names of palpable objects are made known to the deaf, and at a still greater loss to imagine how they can be brought to use language to express their ideas. Having themselves obtained knowledge through the ear, having been accustomed to impart their thoughts by oral communications, they seem to forget that the mind has intelligence in all the senses, connecting it with the external world, and conveying knowledge to those higher faculties which compare, discriminate, and judge. In an intelligent though uneducated deaf person, an observer would find these processes going forward, though confined indeed to a very limited sphere, owing to the poverty of his knowledge, but still knowledge, and deduced from observation. The existence of the reasoning power being thus evident, the means to cultivate it would be the next object for philosophic investigation. That Aristotle had never made these observations and investigations is evident, or he would not have come to that absolute conclusion which excludes the deaf from all participation in knowledge. Among other people of antient times these unfortunate beings were the objects of a species of proscription, being supposed to labour under the curse of Heaven. Previous to the time of Justinian the Roman laws maintain an absolute silence upon the deaf and dumb. They speak frequently of deaf persons, not being dumb; and also of dumb persons, not being deaf; but never of those labouring under both these deprivations. The Code (lib. vi., tit. xxii. l. 10) mentions the deaf and dumb in a manner express and special. Five classes of persons labouring under one or both of these deprivations are established. Those who from their birth were deaf and dumb were legally incapable of making a will, or of manumitting a slave, and laboured under other civil disabilities.

The reader will find in the work of C. Guyot, of Groningen, which is a dissertation written in Latin on the legislation relative to the deaf and dumb down to 1824, with a list of authors, all that relates to this part of the subject. Saint Augustine declares that the deaf and dumb are shut out from obtaining religious knowledge; and many respectable ecclesiastics in the time of the Abbé de l'Epée openly condemned his undertaking. The benevolent abbé also informs us that parents considered it a discredit to have deaf and dumb children, and they believed that they fulfilled every claim such offspring could have on them by merely supplying their animal wants, concealing them from the eyes of the world within the walls of a cloister, or in some other obscure abode. He also asserts that in some uncivilized countries the deaf and dumb were in *his* time regarded as monsters, and were put to death as soon as their calamity was ascertained. So that we find naturalists, legislators, divines, philosophers, and even parents, agreeing in the impracticability of conveying knowledge otherwise than by speech, and thereby excluding the deaf and dumb from all means of intellectual improvement.

From the advantages which instruction has afforded to a certain proportion of the deaf and dumb for the last half century, a tolerably correct estimate may be formed of their capabilities for improvement. The deaf-mute living in society, but without instruction, must be regarded as one of the most solitary and melancholy of beings. He is shut out from all but the most imperfect intercourse with his species; and the very intellect by the possession of which he is raised above the lower creation serves only to heighten his calamity, and to render the sense of his deprivation more acute. His perceptions of external objects are indeed accurate but superficial, and confined to a very small sphere. Of the various arts by which the necessaries and conveniences of civilized life are produced, he can have no knowledge beyond that which is included in the range of his own vision. Animal desires he feels, and he is led by the conventional usages of society to the performance of moral duties and the avoidance of open and flagrant crime. Thus he becomes experienced as other human beings are in what is right or wrong. He sees that virtuous actions have a certain amount of reward, in the opinions of good men; for he learns to discriminate between those whose actions are proper and those who do wrong; and again, he sees that in many cases vice meets with disapprobation and punishment among mankind. How this kind of experience shall affect his own conduct must depend not only on the circumstances in which he is placed, as to example and the moral influence of those with whom he has to associate, but also on his own natural tendencies.

The performance of moral duties implies the exercise of intellectual faculties; and from his birth the deaf-mute makes use of his reasoning powers. He is subject to changes of purpose, to changes of feeling, to the passions, the pleasures, and the infirmities common to his species. He is sensible of kindness; he gives proofs of affection. That such is the uneducated state of the deaf and dumb might be proved by the observations of their parents, friends, and instructors in hundreds of instances. That such must necessarily be the case, supposing them not to be idiots, it would be easy to show. We affirm, in contradiction to those who contend that deaf-mutes are naturally more debased than other men in intellect and in morals, that there is not an individual deaf-mute now under instruction—improving, and thereby evincing rational faculties—who, previous to instruction, however disadvantageous the circumstances which attended his earlier years, did not evince moral sentiments and intellectual operations. We have traced the history of many of this class in different ranks of society down to the period when the deprivation under which they have laboured was first ascertained; and we have found invariably that mixture of good and evil in their actions and tendencies which is seen amongst other children. We have also had sufficient proofs of the exercise of intellect even while they were in a state of childhood. The parents of deaf and dumb children can sufficiently attest the truth of these observations.

At the same time, it must be acknowledged that the deaf and dumb are generally inferior in their moral and intellectual powers to those who do not labour under the same defect. But this inferiority is only one of degree, and may be satisfactorily accounted for, in accordance with the opinions above expressed. Andral has described the state of an uneducated deaf and dumb person; and to a certain extent we can adopt his sentiments. Experience and observation among this class of persons would have induced this accomplished pathologist to have bestowed on them even a more liberal endowment. 'The deaf-mute exhibits in his intellect, in his character, and in the development of his passions, certain modifications which depend on his state of isolation in the midst of society. We find him remain habitually in a sort of half-childishness, and he has great credulity: to balance this he is like the savage, exempt from many of the prejudices which we owe to our social education. In him the tender sentiments are not very deep; he appears not to be susceptible either of lasting attachments or of lively gratitude; pity touches him but feebly: he is an entire stranger to emulation; he has few enjoyments and few desires: and the impressions of sadness but slightly affect him. This is what is most commonly observed in deaf-mutes; but this picture is not universally applicable. Some, more happily endowed, are remarkable for the great development of their intellectual and moral nature; there are others, on the contrary, who continue in a state of complete idiocy.' (*Dictionnaire de Médecine*, article Surdi-Mutité.) This last remark of Andral's requires some qualification. Deaf and dumb persons who possess intellectual faculties are no more liable to become idiots than others whose organs perform their appointed functions. Their powers may remain undeveloped; they may be ignorant of every thing which depends on intercourse with mankind; their reasonings may be inconclusive, and their inferences erroneous from their confined observations; but still their mental powers will be called into action, and they will be, to a great extent, under the control of their reasoning faculties. This is not the case with idiots: in them there is a total want of self-government, a total absence of intellectual control. There are, at the same time, numerous cases of idiots who are *dumb;* not, however, in consequence of deafness, but from their incapacity to understand the meaning of language, to imitate it, and to apply it. These persons cannot be classed with *the deaf and dumb*. It may be this class to which Andral particularly alludes in the latter part of our quotation; for he qualifies his remark in some measure by adding, 'The difference in the intellectual and moral nature of man is often primitive, and independent of all external influences.'

Of the same opinion with ourselves we find Degérando, Bébian (the successor of Sicard), Piroux of Nancy, and all the more successful teachers of the deaf and dumb of the present day in this country, and throughout Europe and America. The empiricism and deceptions which dishonoured the earlier schools for the deaf are gone. The credulity and the delusions of which these were the effect are no longer a disgrace to our institutions. The craft is no longer confined to a few individuals, for whose benefit it is necessary that mankind should be ignorant of the nature and capabilities of those who are deaf and dumb. To corroborate the views we have taken, the deaf may be allowed to speak for themselves. The beautiful account of the early life of Jean Massieu, which was written by himself for the author of 'La Corbeille des Fleurs,' exhibits the intellectual and moral condition of Massieu, prior to the education which he received from Sicard. Many passages in that account will abundantly illustrate what we have advanced. Massieu is a metaphysician of no common cast, as will be seen from the following answers to questions proposed to him, by various persons, at different times and places. He was asked, 'What is gratitude?' 'Gratitude is the memory of the heart.' 'What is a sense?' 'A sense is an idea-carrier.' 'What is the difference between things physical and moral?' 'Things physical are the objects which fall under our senses; things moral are manners and actions of mankind, the operations and qualities of the soul. Things physical are material; things moral are immaterial.' 'What is ambition?' 'Ambition is the immoderate desire of governing, gaining riches, or possessing anything which we have not. Ambition is also an excessive ardour for honour, glory, places of distinction, exaltation. It is the movement of a soul which hovers round an object which it is coveting or ardently pursuing.' 'What is hope?' 'Hope is the flower of happiness.' 'What is eternity?' 'A day without a yesterday or to-morrow—a line that has no end.' 'Does God reason?' 'Man reasons, because he doubts, he deliberates, he decides. God is omniscient; he never doubts: therefore he never reasons.' The account of Massieu's early life is printed at the end of Sicard's 'Théorie des Signes.' Several translations of it have been published.

The first mention we meet with of the capacity of those born deaf to receive instruction, is in the writings of Rodolphus Agricola (born A. D. 1442) of Groningen. He does not inform us who was the parent of the art; but he mentions in his posthumous work, 'De Inventione Dialectica,' that he had himself witnessed a person deaf from infancy, and consequently dumb, who had learned to understand writing, and, as if possessed of speech, was able to note down his whole thoughts. The truth of this relation was doubted by Louis Vives, of Valentia, who wrote in the beginning of the sixteenth century; but there is as good reason to put trust in Agricola's account as to join in Vives's disbelief. (See the treatise, *De Anima*, of Vives, *L. ii. c. De Discendi Ratione.*) Not long after the death of Agricola, and during the life of Vives, the theoretical principles on which the art rests were discovered and promulged by the learned Jerome Cardan, of the University of Pavia, his native place. He was born in 1501 and died in 1576. Cardan thus expresses himself:—'Writing is associated with speech, and speech with thought; but written characters and ideas may be connected together without the intervention of sounds, as in hieroglyphic characters.' (See *Journal of Education*, No. VI. p. 204.) The first practitioner of the art of instructing the deaf was Pedro de Ponce: this fact is authenticated by two of his contemporaries, Franciscus Vallesius and Ambrosius Morales. Ponce was a monk of the order of St. Benedict, at Oña. Morales, in his 'Antiquities of Spain,' thus speaks of Ponce:—'He has already instructed two brothers and a sister of the constable, and he is now occupied in instructing the son of the governor of Aragon, deaf and dumb from his birth, as the others were. What is most surprising in his art is, that his pupils speak, write, and reason very well. I have from one of them, Don Pedro de Velasco, brother of the constable, a written paper, in which he tells me that it is Father Ponce to whom he is indebted for his knowledge of speech.'

The register of deaths of the monastery of the Benedictines of San Salvador de Oña, informs us of the death of Pedro de Ponce, in August, 1584: it records of him that he 'was distinguished by his eminent virtues, and that he obtained a just celebrity throughout the world in instructing deaf-mutes to speak.' John Paul Bonet, also a Spaniard, published a work on this subject nearly forty years after the death of Ponce. He had probably heard of the success which had been attained in this infant art; and from tradition he might have gained some glimpses into the methods Ponce had pursued; but it appears that he was unacquainted with those methods in any serviceable form, as he represents himself as the inventor of the modes which he pursued, including mimic signs, writing, dactylology, and the oral alphabet. His work, which was in after-years useful to de l'Epée, is entitled *Reduccion de las Lettras, y Arte para enseñar á hablar los Mudos.* [BONET.] During the time of Bonet, the art was also making some progress in Italy. Several individuals are mentioned in Degérando's work who were more or less engaged upon the subject. Affinate wrote at the commencement of the seventeenth century on a manner of teaching the deaf to speak; and Fabrizio d'Acquapendente wrote upon the phenomena of vision, voice, and hearing; and on speech and its instruments. In 1616, Jean Bonifacio published a treatise on the language of action. Pierre de Castro, who was chief physician to the duke of Mantua, instructed the son of Prince Thomas of Savoy, but it is not known on what principles. Pierre de Castro died in 1663. About 1670, Father Lana-Terzi, a Jesuit of Brescia, who is described as 'an ardent investigator of nature,' employed himself on the subject of giving language to the deaf, and teaching the blind to read and write.

Many first discoveries were probably made of this art: several of them originated with, or were carried forwards by, philologists, and particularly among the schemers for an universal language. In England, John Bulwer's name must stand prior to that of any other individual as an author on the subject, and his views, as given in 'Philocophus,' are sound and practical. It has often been attempted to place Dr. Wallis at the head of this list of discoverers in England; but Bulwer's 'Philocophus, or the Deafe and Dumbe Man's Friend,' was published several years before Wallis attempted even his treatise on speech, and he did not publish his claims as an instructor of the deaf till 1670. We find on consulting the above-named work of Bulwer's, that Chap. XV. contains the relation of Sir Kenelm Digby as to what Bonet had accomplished in Spain; and there is no doubt but Wallis obtained information from the same source, as he was in constant correspondence with Sir K. Digby. [BULWER.]

A degree of credit is certainly due to Dr. Wallis for the pains he took to systematize what had been done up to this period, and to bring the philosophy of language to bear upon the art. His two great objects, as stated in a letter to Mr. Boyle, were 'to teach a person who cannot hear to *pronounce the sound of words*,' and to teach him 'to *understand a language* and know the signification of those words whether spoken or written, whereby he may both express his own sense and understand the thoughts of others.' Writing, reading on the lips, and speech, the manual alphabet, logical induction, the natural signs—acquired from the deaf—were the means he made use of. From the accounts which have come to us, he succeeded in his purpose. His pupil, Daniel Whalley, was exhibited before the Royal Society in the year 1662. The priority of his invention was disputed by Dr. William Holder, rector of Bletchington, who asserted that he had, in the first instance, taught Popham, one of Dr. Wallis's pupils, to speak. Holder published his *Elements of Speech, with an Appendix, concerning persons Deaf and Dumb*, in 1669, which was some years after Wallis's first writings and practice had been made known.

In the same year in which Wallis made known his inventions for the deaf, 1670, George Sibscota published a little work on the subject, entitled the 'Deaf and Dumb Man's Discourse.' He had learned from the writings of Franciscus Vallesius to what extent Ponce had succeeded. Very little can be gleaned from this work, which consists chiefly of reasoning and theory.

The next author on the subject whose work we shall notice is George Dalgarno. His treatise, though full of the conceits of learning, is essentially practical, and even at the present day it might serve as a guide to an intelligent person who desired to become an instructor of the deaf. The date of this little work is 1680. [DALGARNO.]

Dalgarno announces on the title-page of 'Didascalocophus,' that his treatise is the first (for aught he knows) that has been written on the subject. He commences by showing that a deaf man is as capable of understanding and expressing a language as a blind man, inasmuch as that all information is conveyed to the mind through the bodily organs. He goes too far however in attempting to show that the deaf man has even superior advantages in acquiring languages to those of the blind. Dalgarno's alphabet is exhibited in the article DACTYLOLOGY.

We will now trace the earlier progress of the art in Holland. Peter Montans offered some remarks on the instruction of the deaf so early as 1635. F. M. Van Helmont published in 1667 a small tract, entitled *Alphabetum Naturæ*, in which he shows how the deaf may be made to understand the motions of the organs of speech, much after the manner of others who are taught to read. His book is remarkable for some singular opinions on the nature and origin of language; and he mentions instances of the result of his system, too improbable to be received even by the most credulous. In 1690, John Conrad Amman, a Swiss physician, residing at Haarlem, undertook the instruction of a girl, deaf and dumb from birth. He seems not to have been aware how much had been accomplished in this art: his own success was decisive; and while his work was in the press, he became acquainted with the writings of Wallis, and entered into correspondence with him. His essay, entitled 'Surdus Loquens,' the speaking deaf man, was published in Latin. His methods were founded on articulation. Amman requires that his pupils' organs of speech shall be rightly formed, then, he says, 'my first care is to make him to sound forth a voice, without which almost all labour is lost; but that one point, whereby deaf persons do discern a voice from a mute breath, is a great mystery of art, and if I may have leave to say so, it is the hearing of deaf persons, or at least equivalent thereto; viz., that trembling motion and titillation which they perceive in their own throat whilst they, of their own accord, do give forth a voice. That the deaf may know that I open my mouth to emit a voice, not simply to yawn, or to draw forth a mute breath, I put their hand to my throat, that they may be made sensible of that tremulous motion when I utter my voice; then I put the same hand of theirs to their own throat, and command them to imitate me; nor am I discouraged if, at the beginning, their voice is hard and difficult, for in time it becomes more and more polite.'

Amman goes on to explain how he communicates the pronunciation of letters singly and combined, in a way sufficiently plain for any intelligent person to follow his plan. He concludes by saying, 'if there occurs to anybody anything either too hard or not sufficiently explained, he may expect a more full edition; or else let him repair to the author, who, according to the lights granted to him, will refuse nothing to any man.'

At the commencement of the eighteenth century the art began to attract the notice of the learned of Germany. Very early in the eighteenth century, Kerger commenced the work of instruction at Liegnitz, in Silesia. His sister was associated with him in his labour. He used drawing, pantomime, articulation, and writing; it is uncertain whether he employed dactylology, but he speaks highly of mimic language. Contemporary with Kerger was George Raphel, pastor and superintendent of the church of St. Nicholas at Luneburg, who had six children, and among them three daughters who were deaf and dumb. Paternal affection made him an instructor of the deaf; he succeeded beyond his hopes, and wrote an account of his proceedings for the benefit of others. His work was published at Lunenburg in 1718. Other teachers in Germany were Otho Benjamin Lasius, the pastor Arnoldi, and Samuel Heinicke. Lasius confined himself almost solely to the teaching of visible language, as reading and writing, associating the forms of the words with the ideas they were intended to convey. It is said that his pupil made a satisfactory progress, and that at the end of two years she could answer important questions on religious subjects. Arnoldi used the means more commonly employed; articulation, drawing, dactylology, writing, and natural signs. Heinicke was the instructor at Leipzig of an institution founded in 1778. He had announced previously to this time that in the course of six weeks he had taught a deaf and dumb person to answer whatever questions were proposed to him. He used those means which had been employed by previous instructors, and he also placed instruments in the mouths of his pupils to regulate the positions of the vocal organs in emitting sounds. He claimed the honour of invention on many points, and guarded with strict secrecy some of his proceedings. He was a man of great self-conceit, irritable, rude, and overbearing. He had adopted the philosophic system of Kant, and published some writings relating to it. He is said to have been a man of considerable talent in the instruction of the deaf and dumb, and of an active and indefatigable spirit. In his controversy with the Abbé de l'Epée, he certainly gained little credit either as a teacher of the deaf, or as a philosopher.

France commenced this art later than the other enlightened nations of Europe. Indeed she opposed its progress by those philosophic prejudices which in other countries had been refuted by actual experience. A deaf-mute from birth, named Guibal, had made his will *in writing* so early as 1679; and proofs of his knowledge and intelligence were produced in court, so that it was confirmed. It is unknown who had been his instructor. About the middle of the seventeenth century, several individuals in different parts of France turned their attention to the subject. Those of whom we know most are Father Vanin, a priest of the Christian doctrine, Rodrigue Péreire, a Portuguese, Ernaud, the Abbé Deschamps, and the Abbé de l'Epée. Father Vanin employed design both for giving information on sensible objects, and also in an allegorical way to illustrate abstract and intellectual ideas. Very crude and erroneous notions must have resulted from a system so imperfect, and so little capable of extensive application. The first person who excited general attention in Paris was Péreire; he obtained the approbation of the Academy of Sciences, to the members of which learned body he exhibited the progress of his pupils. His processes were made a secret even to the members of his family; he however offered to disclose them for a suitable consideration, which was withheld, and the nature of his system is only imperfectly known at the present day. His pupils were highly instructed, more highly perhaps than any of an earlier or a subsequent period. A judgment may be formed of the efficacy of his methods from the report of a committee of the Academy of Sciences, where it is stated that his pupils were able to understand what was said to them, whether by signs or by writing, and that they replied *vivâ voce*, or by writing; they could read and pronounce distinctly all sorts of French expressions; they gave very sensible replies to all questions proposed to them; they understood grammar and its applications; they knew the rules of arithmetic, and performed exercises in geography; and it appeared that M. Péreire had given them, with speech, the faculty of acquiring abstract ideas. The two best known of Péreire's numerous pupils were Saboreux de Fontenai, and D'Azy d'Etavigny. The former of these two has written an account of the means pursued by his teacher, for which we must refer to the work of the baron Degérando before mentioned. It appears that Péreire employed articulation, reading from the lips, the manual alphabet, and a method of syllabic dactylology. By this latter instrument of instruction he was enabled to communicate very rapidly with his pupils, and by the frequent use of words in different combinations a knowledge of their value was imparted to them. Thus the frequent recurrence of words, through so rapid a mode of intercourse, assimilated the acquisition of language to the ordinary process with hearing and speaking persons. The channel of communication being established, and a copious knowledge of words acquired, the art of the instructor would be little more difficult than that of ordinary education. A few years after Péreire's methods had received the approbation of the Academy of Sciences, Ernaud presented to them a memoir on what he had attempted for the deaf and dumb. The Society gave him encouragement, but it appears that the pupil brought under their notice was not far advanced in instruction. Ernaud's attempts were more particularly directed to measures of physical relief; he revived the sense of hearing in some cases where it had been partially lost, and he asserts that he had never met with an instance of total deafness. Articulation was the principal means he employed. In 1779 the Abbé Deschamps published his 'Cours Elémentaire d'Education des Sourds-Muets.' To the education of this class of persons he devoted his life and his fortune. He followed in the track of Amman, giving the preference to articulation, and the alphabet upon the lips, over the methodical signs of the Abbé de l'Epée. His establishment was at Orleans, where he received paying pupils, and instructed the indigent gratuitously.

In tracing these early steps in the instruction of the deaf and dumb, we have attended more particularly to the working parts of the different methods by which such instruction was intended to be conveyed. We have passed over the various philosophic theories with which some of these methods are encumbered, because they are either forgotten, or rendered obsolete by recent discovery. Much learning was antiently wasted on subjects in themselves trivial, mysterious, or incomprehensible, yet to such researches we owe much valuable knowledge. It seems that no investigation into the laws of nature, however absurd or unattainable the immediate object of such investigation, is utterly without reward. The alchemists of olden times, though failing to discover the wonderful stone for which they sought, found out new properties, new substances, and new combinations, which cheered their labours and conferred direct benefits on society. So, with many of the writers we have noticed, their speculations, though wild, have not been in vain; the useful parts of their systems have been retained, and are now diffusing good among the class for whom they laboured.

The Abbé de l'Epée was one of the most active and benevolent labourers in this task of humanity. He brought into systematic operation the notions which had previously prevailed on the possibility of conveying intellectual knowledge to deaf-mutes, and added to these stores of experience from the resources of his own highly-gifted and well-disciplined mind. He certainly succeeded to a greater extent than any of his predecessors in enlisting the public feeling in his favour, and in drawing the attention of sovereigns to one of the most unquestionable works of charity and of mercy; yet his name has not been suffered to descend to posterity unstained by obloquy, nor undimmed by malignant censure. It appears that accident first made him acquainted with the deaf and dumb; benevolence led him to the consideration how their wants might be supplied. He remembered that his tutor had once proved to him that there is no more natural connection between metaphysical ideas and the articulated sounds that strike the ear, than between the same ideas and the written characters that strike the eye, and that his tutor drew this conclusion: —that it was as possible to instruct the deaf and dumb by writing, always accompanied by visible signs, as to teach other men by words delivered orally, along with gestures indicative of their signification.

In the early part of de l'Epée's career he met with the work of Bonet before mentioned, and the enlarged treatise by Amman, 'Dissertatio de Loquela.' With these guides, aided by the enthusiasm which formed a part of his character, he pursued his task vigorously and with a certain amount of success; not with the success of some of his forerunners in the art, who had devoted themselves entirely and for years to individual pupils. The Abbé had a large number of pupils to whom he devoted his life and patrimony. Every one who has been a teacher knows well the degree of success which he may expect if his whole mind is concentrated upon the improvement of a few individuals, and the difficulties he may anticipate if his attention is divided among a great number of pupils. The Abbé appears to have made use of articulation in one part of his career, for he wrote a treatise on the mode of teaching by this auxiliary: this treatise was chiefly derived from the writings of Bonet and Amman. He employed dactylology, as it ever must be employed, so long as it is confined to the alphabet only, in a subordinate degree. Pictures he found an uncertain resource, and only useful in the earlier stages of instruction. Methodical signs and writing were the means on which he chiefly depended for the conveyance of intellectual knowledge. The employment of methodical signs for words is only the substitution of one artificial language for another. He established a connection in the mind of the pupil between these signs and the language of their country, but it is by no means satisfactory that he established a connection between these signs and the ideas which they were intended to represent.

The Abbé de l'Epée commenced his work by endeavouring to perfect a language of methodized signs as copious and accurate as the spoken language of a highly civilized country. He seems to have believed that he had only to do this to reduce the process of teaching the deaf to a mere translation. He appears to have lost sight of the fact that he had minds to cultivate and to fill with knowledge, and that without this cultivation the mere knowledge of words, the translation of words into gestures, and of gestures again into writing, would be but labour lost. When he gave his pupils signs for words, he imagined that with the signs he gave them ideas, but he only gave them words. In acquiring a second language, those who already possess one have at command a comparative grammar which informs them to a certain extent of the value of certain words in certain connections with others; but the deaf have no such advantage; their natural and uncultivated language—gesture—is powerless for everything but the expression of their most ordinary wants; they have no separation of their ideas into classes, such as produce the parts of speech in more perfectly formed languages. Adelung mentions the inhabitants of the countries on the Asiatic continent as having 'but one sound to signify *joyful, joy, to rejoice;* and that through all persons, moods, and tenses. The mere radical ideas are set down together, the connecting links must be guessed at. They form plurals as children do, either by repetition, as *tree, tree*, or by adding the words *much* or *other*, as *tree much, tree other*.' *Mithridates*, v. i. p. 18. Thus it is with the naturally deaf, the radical idea is all that their gestural language is capable of expressing until modified by those arbitrary forms of speech which are the accessories of every polished language.

An example of the mode of communication which the Abbé de l'Epée adopted may be taken from his work. M. Linguet had observed that the deaf and dumb were demi-automatons. The Abbé addressed him, and a short time after Linguet visited the Abbé and his pupils. 'I requested him,' says the Abbé de l'Epée, 'to propose at his fancy, some abstract ideas to be delivered by methodical signs to the deaf and dumb. As, out of compliment, he referred the choice to me, I addressed him to this effect:—"*Intellect, intellectual, intelligent, intelligence, intelligibility, intelligible, unintelligible, intelligibly, unintelligibly, unintelligibility:* here are nine words all generated from 'intellect,' to be expressed by distinct methodical signs. *Comprehensible, incomprehensible, comprehensibly, incomprehensibly; Conceivable, inconceivable, inconceivably; Idea, imagination, imaginable, unimaginable; Faith, credence, credible, credibly; incredible, incredulous, incredulity:* here, learned sir, is a cluster of abstract ideas, which shall be left to your option." After some further little contest of politeness, he selected the word *unintelligibility*, doubtless conceiving it of greater difficulty than the rest. It was instantly rendered to the pupil and written down. While he was viewing it with eyes of amazement, I thus resumed: "Barely to produce the word you specified, learned sir, is a mere nothing. I will now unfold to you the means taken to prompt it by methodical signs; the exposition will not detain you long. Five of these signs were fully sufficient to designate the word; and you saw with what celerity they were given. The *first* signifies 'not an external but an internal action;' the *second*, 'of reading the mind, that is exhibiting the disposition of apprehending the things proposed to it;' *the third* announces 'the possibility of this disposition,' whence arises the appropriate noun-adjective, *intelligible;* which, being a concrete quality, is converted into the abstract by a *fourth* sign, forming *intelligibility;* and a *fifth* sign being added for negation, *unintelligibility* is produced." By this and other examples M. Linguet was convinced that his expression was inaccurate and inconsiderate; but we need not follow out the examination which the pupils underwent in his presence. We have quoted this example in order to show the mechanical nature of methodical signs. That these signs were well qualified for dictation of words was sufficiently proved in the Abbé's experience, but the words might be produced by the pupil from the signs of the teacher without their being understood, just as an ordinary schoolboy, unused to Latin exercises, might, from the dictation of his teacher, produce examples without understanding a single idea which they contained. These remarks are not made without some reservation; the Abbé professed to teach the meanings which the signs and words were to represent; but why did he not use the words only, without taking his pupils through a double mental process?

Herein is the great imperfection of the system of methodical signs, yet all his operations were not controlled by this peculiar system, and, when it was possible, the Abbé made use of the *natural* signs used by the deaf-mutes themselves, and interwove them with others of his own composition. Thus, in distinguishing gender, he says, 'The gender is explained by putting our hand to our hat for the masculine, and to the ear, the part to which a female's head-dress extends, for the feminine.' In the English institution the hand is placed to the beard to denote the masculine, and drawn along the forehead, in allusion to the parting of the hair, for the feminine. The following is the generally-received sign for singular and plural: 'The elevation of the right thumb designates the singular, the motion of several fingers the plural.' The following is also good: 'To express doubt, we turn our head to the right, a *yes*, and to the left, a *no;* which of the two will take place we cannot tell; we shall know only by the event.' Many similar examples might be adduced: how superior are these to 'twirling two fingers round each other while declining, that is, while descending from the first to the sixth,' to signify the term *case;* or 'the left hand under the right for the noun-substantive,' and 'the right under the left for the adjective,' will be readily perceived.

We do not regard the success of the Abbé de l'Epée as complete, but we are satisfied that he pursued his methods with openness and candour, and with the single desire of promoting the moral and intellectual advancement of the deaf and dumb. Heinicke of Leipzig, and Péreire of Paris, must be regarded as his rivals, but he invited them to a discussion of the merits of the various systems, which they declined. While the good Abbé, with that frankness which formed a beautiful feature in his character, solicited the examination and the judgment of the learned upon his methods, his rivals shrouded their proceedings under a veil of mystery. The Abbé devoted his life and whole fortune, excepting a bare supply for his own wants, to the service of the class whom he had taken under his protection. Péreire refused to disclose his methods except for a large recompense; and Heinicke, in addition to receiving payment from the rich, had four hundred crowns annually allowed him by the grand duke of Saxony. Both these persons made the art they professed an interested speculation; the Abbé de l'Epée only tolerated the rich—he was proud of being the instructor of the indigent. His successor, the Abbé Sicard, carried forward the principles of De l'Epée: he instructed his pupils in the elements of composition, a branch of their education comparatively new, and in which Sicard most completely evinced his superiority over his master. Sicard at first conducted a school at Bordeaux; on the death of the Abbé de l'Epée, Sicard was called to fill his place at Paris. The philosophical opinions and penetrating views which Sicard maintained and practised are well developed in his 'Cours d'Instruction d'un Sourd-Muet,' in which is developed the plan on which he conducted the education of his celebrated pupil Massieu. He followed the leading principles of De l'Epée, particularly in employing methodical signs as one of the chief instruments of instruction; he considered well the nature of language, and by his clear and analytical methods of sensible illustration, he contrived to make the leading principles of grammar familiar to his pupils. In the latter years of Sicard's practice he thought more favourably of articulation, as a means of rapid communication between master and pupil, than he had done at the commencement of his career. The Baron Degérando says of his most popular work, 'When we read the "Cours d'Instruction d'un Sourd-Muet," we almost fancy that we are reading a kind of philosophical romance. It borrows its forms, and creates a similar interest; we find in it something of the romance of the Arabian Theophail (*Le Philosophe Autodidactique*); something which appears borrowed from the pictures of Buffon, the statue of Condillac, and the Emilius of Rousseau; it is a soul which has hitherto slumbered, which awakes; a hitherto darkened mind, which opens to the light; an intelligent life, which begins to develop itself, amid a variety of scenes, to the voice of the instructor; it is a kind of savage, strange to our customs, who is initiated into our ideas, our knowledge, and at the same time into our language. The Abbé Sicard enlarges upon each of these progressive stages, and he spreads over them the charm of a drama; he paints with warmth the uncertainties and the joys of the master and the pupil: and he succeeds in thus showing, in an animated picture, definitions and processes which appear the most barren in their nature; he gives a shape to the most abstract notions; it might be said that the Abbé Sicard is the *painter of syntax*, and the *poet of grammar*. This work went through several editions, and we need not be surprised at it, for it is not to the deaf and dumb alone that it may be profitable.'

Of the 'Theorie des Signes,' a work founded on the principles of the Abbé de l'Epée, we can only give a faint sketch. It is a kind of dictionary, in which the expressions of the face, and the attitudes of the body, for the communication of certain ideas, are described. The arrangement is not the ordinary alphabetical form of a dictionary, but a kind of logical order 'more conformable to the nature of things, and the growth and expansion of ideas.' The work is divided into twelve classes of things, adopting in each class an alphabetical order corresponding to the French language. These classes are arranged as follows:—

1. Signs of names of the most common objects, and such as come under observation during infantile years; these are the parts of the body, clothing, food, beverages, a town and its parts.

2. Vegetables, comprising forest-trees, shrubs, fruit-trees, culinary vegetables, medicinal herbs, wild plants, &c.

3. Minerals—gold, silver, copper, brass, lead, tin, iron, &c.

4. Of man—ages of man, relationships, school, institution, college, officers, domestics and servants of a house, tradespeople, mechanics, merchants; the liberal arts; titles, dignities in towns, cities, and states, and their functions; terms of war; ecclesiastics, and monastic functionaries.

5. Of God, angels, saints.

6. Of the elements, of fiery, luminous, and watery meteors; the firmament, earth, cardinal points, signs of the zodiac.

7. Parts of the world; names of nations, empires, kingdoms, republics, capitals, principal islands, &c.

8. Numbers, measures, weights, time, money, exchanges, commerce.

9. Organic qualities of man; abstract organic qualities of man; maladies of the body.

10. Qualities of matter; such as strike the senses of man, dimensions, shapes, surfaces, extent, quantity, lines, angles.

11. Physical actions of man, such as are expressed by verbs.

12. Intellectual and moral actions of man, expressed by verbs, nouns, adjectives, and adverbs.

These are the divisions Sicard adopted for his nomenclature, which occupies nearly the whole of the two volumes comprising the work, the latter portion of which is purely grammatical: in it the different parts of speech are considered not only under a general view, but under certain divisions which indicate their value, and assimilate those which bear a relationship to each other; thus adverbs of *manner*, of *number*, of *place*, of *quantity*, of *quality*, of *interrogation*, of *affirmation* and *negation*, of *time*, of *doubt* and *inquiry*, and of *comparison*, are distinctly and separately treated of. Without questioning whether the classification adopted in the twelve divisions of the 'Theory of Signs' be the best, we may see in such a classification the kind of gradations needful for supplying the deaf with an extensive nomenclature; and though few instructors would make the work a practical one, so far as to adopt the system of methodical signs there developed: yet, as a text-book, it unfolds a plan which any teacher may modify according to his own views. We think the work is less valued than it deserves to be, for as signs will, to a certain extent, be always in use among the deaf and dumb, especially in those institutions where they are educated, the theory of signs would be found of great use as a work of reference to all teachers. We need not panegyrize the Abbé Sicard; his exertions for the deaf and dumb are well known in this country, which he visited during the political troubles of France in 1815; his merits are acknowledged wherever the education of the deaf is pursued. We have sometimes been surprised that the 'Cours d'Instruction d'un Sourd-Muet' has not been translated into our language. Independent of its novelty and interest as connected with its more immediate design, its gradual unfolding of a great mind involved in moral and intellectual darkness, by a metaphysician of high endowments, presents some interesting psychological facts which would make it serviceable in general education; the illustrations of language and the development of ideas are just such as an accomplished and lively teacher would desire to place before his pupils to assist in conveying to their minds a just estimation of the value of words and the knowledge which they serve to impart.

In England, after the time of Bulwer, Wallis, Sibscota, and Dalgarno, the art slumbered for many years. It was revived by Henry Baker, the naturalist and microscopical observer, who taught dumb persons to speak, and of whom it is recorded by Dr. Samuel Johnson, that he once 'gave him hopes of seeing his method published;' he however kept the plan he followed secret. Of the extent of his success we know nothing, but it is said that the names of some of the first families in the land are among those of his scholars. [Baker, Henry.] About the year 1760, Thomas Braidwood had an academy at Edinburgh, where he taught the dumb to speak, and cured impediments in the speech. He professedly pursued the plan of Dr. Wallis, as developed in the 'Philosophical Transactions.' Articulation was therefore the chief instrument of instruction, and the principal medium of communication between the pupil and teacher. In 1783 Braidwood removed his school to Hackney, where he enjoyed for many years a deserved reputation for his successful application of the discoveries of his predecessors. [Braidwood.] Under him the late Dr. Watson became acquainted with those principles which he brought to much greater perfection than his predecessor, and developed in his work on the 'Instruction of the Deaf and Dumb,' and which he practised during his long superintendence of the Asylum in Kent Road, London. Indeed Dr. Watson was to Mr. Braidwood what Sicard was to De l'Epée; the disciples in each instance gave solidity and permanence to the systems of their respective masters.

The primary instruments by which the deaf and dumb are now generally taught, are *speech*, including *articulation* and *reading on the lips;* and natural or imitative signs. By these a communication more or less direct may be established between the teacher and the pupil. The subordinate auxiliaries are *writing*, *pictures*, *methodical signs*, and *dactylology;* the last may be *syllabic*, as employed by M. Péreire, or *stenographic*, as employed by M. Recoing, of Troyes, in the education of his deaf and dumb son. By this gentleman, *stenography*, in its wider sense, was also made available with success. We have seen that artificial articulation was among the earliest means resorted to as a medium of communication. Ponce, Bonet, Wallis, Van Helmont, Amman, Arnoldi, Heinicke, Péreire, Ernaud, Deschamps, Baker, Braidwood, and Dr. Watson, used their pupils to understand the speech of others and to speak themselves. The great advantage of speech is that it is the readiest method of intercourse between teacher and pupil. In teaching the deaf and dumb, the first object in view is to impart to him the language of his country; the second is grounded on this—to fill his mind with intellectual, moral, and religious truth. These two objects are generally made to accompany each other; the communication of knowledge in easy language familiarizes him with the use of language, and the exercises in speech are made the vehicle of valuable knowledge. In teaching vocal sounds to the deaf, the eye and the sense of touch are chiefly employed; the letters of the alphabet are classified; the sounds that are labial, dental, lingual, guttural, nasal, and those which are combinations of two or more of these, are taken in such an order that the pupil may discern differences in their similarities, and in some instances the organs of speech are shown, by means of drawings, in the required positions for the emission of certain sounds.

The open mouth, the widening lips, and part of the tongue, may be shown in the pronunciation of *a*, the nearly closed lips, hiding both tongue and teeth in *u*; in *b* the compression of the lips can be accurately shown, and the labial-nasal sound *m*, may be said to be exhibited in the closed lips, and by a line of dots to show the emission of air through the nostrils. It must be clearly understood that such drawings are chiefly useful in showing the positions of the organs.

Accompanying the exercise, the pupil must be made to notice the external organs of speech in his teacher, to feel the vibration with his own hand which sound creates in the trachea, and also to feel those emissions of breath which are caused by the production of certain sounds. He will be made to imitate such utterances; and by the exercise of patience and ingenuity on the part of the teacher, ingenuity chiefly directed to those little arts which refer to the mechanism of speech, and patience that will not be discouraged by repeated failures, the pupil will succeed in imitating what he observes, and in time he will accomplish what is required. In Wilkins's 'Essay towards a Real Character' there is a diagram of the positions of the organs for producing vocal sounds, which may be consulted with advantage, though not in every instance accurate. While a pupil is engaged in acquiring the articulated sounds he may also be employed in writing the letters which they indicate, and in learning their shapes by the eye; he may also be initiated in the manual alphabet. It appears desirable that a system of syllabic articulation should be invented for the deaf; it would render the combinations of sounds more easy than at present, assimilating them more with spoken language. In Edgeworth's 'Practical Education' the consequence of teaching hearing children alphabetic sounds is thus exhibited. A child having learned the alphabet, and having to read the words *Here is some apple pie*, would, it is fairly enough suggested, pronounce thus: *Acheare ies esoeme apepele peuie*. This is not exaggerated; with hearing children, constant reading corrects the tendency; but numerous instances of this nature must and do occur among the deaf, who in many cases retain the first impressions they receive as to the sounds of letters. The medley of sounds which we heard a deaf person produce on attempting to utter the word *greyhound* a short time ago convinced us that a syllabic arrangement of sounds would, if practicable, be accompanied with many advantages. Of late years, artificial articulation, with or without the exercise of reading from the lips of a speaker, has come almost into general favour in the institutions for the deaf. At the London Asylum it has always occupied a prominent place; it has been most successfully introduced at the Royal Institution at Paris; it is also employed at Groningen, at Gudensberg, at Quedlinbourgh, at Breslau, at Gmünd, at Pforzheim, at Zürich, at Sleswig, at Leipzig, at Munich, and at many other institutions, under the charge of eminent teachers. Not many of the provincial institutions of this kingdom make *speech* an object of the first importance; the principals of such institutions generally are convinced of its value as a vehicle for the transmission of knowledge, but do not make use of it, chiefly on account of its occupying more time than can be given to it, where a large number of pupils require attention, and where the funds will not support a sufficient number of instructors to enable them to teach it effectually. Of its value as a rapid mode of communication, after the acquirement is gained, the instructors of our country are well satisfied; and it is partially taught at the institutions of Manchester and Exeter. At the London Institution some of the pupils articulate not unpleasantly; their reading is monotonous, but their animation in ordinary conversations, especially on subjects of interest to them, gives a species of natural tone and emphasis to what they say.

Another primary auxiliary in the education of deaf-mutes is that modification of the language of gesture called natural signs. In this language the deaf and dumb take great pleasure; if unrestrained, it would be their only mode of communication with each other; and they appear to find in its resources all that is necessary to give life and force to their ideas. The quick changes of countenance which they exhibit, the sparkling eyes, the lighted-up features, the sarcasms, the sensibilities thus expressed; the transitions 'from grave to gay, from lively to severe,' all faithfully portrayed in the ever-varying index of their mind, speak at once in favour of this language as the truest mirror of their thoughts, hopes, wishes, and feelings, and inform us that this language is nature's most perfect, most expressive interpreter. To this rude though powerful mode of intercourse, which all the deaf possess in a higher or lower degree, those who are more intelligent add signs of description, by which they are able to explain facts and circumstances which have been brought under their observation. The teacher takes advantage of this method of communication to add to their stores of knowledge, to enrich and extend the sphere of their thoughts, to give them new food for the mental operations, all of which may be accomplished during the time that words and the language of their country is imparted to them. Thus a conventional language is formed which assists in their intellectual culture, increases their happiness, and shows them in some degree the connexion which exists between themselves and the objects by which they are surrounded. In many institutions this use is made of signs: new knowledge is most effectually communicated by their aid. The sixteenth report of the New York Institution for the Deaf and Dumb furnishes an example of which we can avail ourselves to show the great benefit of signs in the business of instruction. The natural signs for the words in which the sense of the sentence is comprised will readily occur to the reader. 'Let it be supposed that an instructor should wish to produce the following sentence: "A horse runs away with a boy, throws him off, and kills him." It is not at all probable that such a combination of circumstances would occur at the moment, and thus enable him to take his pupils to the window and point them out. He must have recourse, then, to signs. It is immaterial what selection of place and circumstance is made, provided only that the facts to be enunciated are clear and prominent. The scene of the occurrence may be laid in the city. The boy is riding slowly along, staring at the multitude of new objects which meet his view, and wholly forgetful of his horse. Suddenly a military company appears from a cross-street, with drums beating and colours flying. The horse becomes frightened and beyond control: he dashes through the street at a furious rate. The boy clings to the saddle, but is at length thrown with violence on the pavement. The blood is seen spouting from his mouth and nostrils. People gather around and raise him up. They feel his pulse; but it has ceased, and the breath of life is gone: the boy is dead. During this description, the class are looking most intently on the instructor. Every eye is fixed, and every countenance full of expression. He has now obtained every thing for which he laboured. Their ideas and notions of the fact are as clear and explicit as his own; and it only remains to express them by written language. To imagine, as some have done, that this process of writing is a *translation* of signs into language, is wholly erroneous. It is no more a translation than the same expression of a speaking child would be, when the casualty should actually occur.' To this we will only add, that the rapidity with which such a description is conveyed to the pupils is inconceivably great, and takes very little longer than the communication of the occurrence vocally, in its shortest form. But the disadvantage attending such a mode of intercourse, when a language has to be taught, is not recompensed by its rapidity, as the words and the syntax of spoken languages are not employed in such descriptions; the pupils are consequently left ignorant of the grammatical construction of sentences. It is therefore found necessary to unite natural and descriptive signs with writing or dactylology, in the use of which the idiom of the maternal language is preserved. Most of the English and American institutions employ the signs we have described: this auxiliary is also employed at Paris, at Yverdun, at Vienna, Toulouse, Nancy, Besançon, Bachtelen, Pisa, and at several other institutions. Mimic signs will always possess this advantage to the deaf over every other mode of intercourse, that they present to them a lively picture, in which facts and circumstances can be constantly and instantaneously reproduced; they address themselves immediately to their perceptive powers, and lead them intuitively, and by a direct process, to form just connexions and conclusions; while our conventional tongues, whether addressed to them by articulation, by writing, or by dactylology, act upon them by the circuitous paths of association, and the habit which they long follow of converting our language into their own.

One important influence which the mimic language exercises on the intellectual development of the deaf has yet to be noticed. This results from its employment among themselves. Much of the knowledge which the younger pupils of an institution obtain is through this medium. The lessons of the teacher for many months have less influence on the minds of his pupils than the intercourse with their associates. This is a powerful argument for bringing up the deaf and dumb in public rather than in private schools. Independent of the stores of knowledge which an assemblage of deaf-mutes bring from the districts in which they have lived, the fruits of their personal observation and experience, the events that have occurred within the walls of the institution, particularly as they bear upon actual occurrences, are handed down by mimic and descriptive signs from one generation to their successors; and a very valuable and available store of intelligence is thus preserved, which at the same time contributes to the formation of character and familiarizes the pupil with the use of this species of language. Respecting *methodical signs* we need add nothing to what has already been said of the method of the Abbés De l'Epée and Sicard. We think they are not much used at the present time in the education of deaf-mutes.

It has been stated that the other aids employed in developing the minds of the deaf are subordinate to those which have now engaged our attention. *Writing* is employed in all institutions; it is an art which is soon acquired sufficiently well for all school purposes. At first it engages the attention of the pupils, while they endeavour to form on their slates those combinations of letters, the meaning of which has been conveyed to them; and thus it relieves the teacher and employs a new set of faculties in the pupils. This slow but permanent repetition of their lesson assists in fixing the forms of words, and the matter conveyed by them, in their minds. At a later stage, it exercises similar influences upon them in a higher degree, and it is, besides, the instrument by which they give permanency to their thoughts and observations in those *compositions* which form an important exercise in these seminaries. It is also the medium to which they chiefly have recourse among strangers, and among their friends, if they find their articulation is imperfect, and their signs are not well understood.

Dactylology is another auxiliary in almost universal use. For a more particular view of the utility and value of this instrument of instruction we refer to the article DACTYLOLOGY.

Pictures and the art of drawing are valuable helps at the commencement of instruction. A collection of all objects cannot be made, nor can objects be so conveniently referred to as representations of them. Either by reference to pictures or real objects, the first lessons are conveyed to the deaf, and they impart an interest to the exercises which no other means could supply. To those who have not well considered the subject, it is a matter of surprise how much of language can be represented by a graduated series of engravings, or even by the rude sketches which a teacher can draw upon his tablet whenever they are wanted, to elucidate the subject which he is desirous to impress on the minds of his pupils. In the work of Bébian, the successor of Sicard (*Manuel d'Enseignement Pratique des Sourds-Muets*), the pictorial art is employed to exemplify substantives, their gender and number, adjectives, the cardinal numbers, fractional numbers, verbs neuter and active, personal pronouns, prepositions, articles, and degrees of comparison; many other portions of language may be explained by diagrams. Drawing is thus of essential service, and the pupils often have recourse to the advantages it offers for any communications which they think will be better comprehended through its medium than others. This art is therefore encouraged, and in many institutions direct instruction is given to the pupils from an early period of their education.

The auxiliaries we have now indicated are used for the conveyance of all kinds of knowledge; in some branches of study one may have a preference to others, from its being better adapted to their elucidation. Thus geography will always be taught from maps, geology from sections, geometry from diagrams; pictures will be used to describe historical events; and signs will be in requisition for the illustration of the arts and trades of men, as well as for showing the manners and customs of distant nations. Collections of metals, minerals, vegetables, animals, animal substances, vegetable substances are of the highest value, and furnish direct evidence of properties and changes which cannot be described. It will even be necessary occasionally to call in the assistance of the workshop and its implements, the laboratory and its apparatus, in order to perform experiments, and to exhibit processes before their eyes; and while the excitement prevails, to make use of the opportunity to communicate not only knowledge, but the primary aim of all instructors of the deaf and dumb—*language*. Having the latter, the attractive form in which knowledge is presented will raise in them a desire to possess this also, and the object of the teacher is fully accomplished.

The period allowed for instruction in the public institutions for the deaf and dumb varies in different countries; in few cases is it so short as in England: in nearly all the continental institutions of celebrity it is considerably longer. With us only five years in most instances are allowed for the education of pupils, who are wholly or partially sustained by the funds contributed for their support. Throughout France, Switzerland, Würtemberg, Sweden, and Poland, the pupils are permitted to continue six years. At the institution of Groningen, and at those of Copenhagen and Sleswig, the pupils remain seven or eight years; at Vienna from six to eight years; at Berlin they continue from six to nine years; and at Leipzig for a like period. Should no other modification of the institutions of Great Britain take place with regard to the duration of a pupil's continuance in them, it would be well if some provision were made to enable pupils of superior talent, and those intended for the more liberal arts and trades, to continue under special instruction, to qualify them for their future business, for a longer period than those who need no such preparation. Nearly every boy may learn to make shoes, to hew wood, and to draw water; but it requires a peculiar training to form artists, engravers, clerks, carvers, modellers, and superior mechanics—arts in which there is nothing to prevent the deaf and dumb from excelling.

The subjects on which instruction is imparted must necessarily vary with the length of time given to education. The following plan of a course of instruction cannot be satisfactorily accomplished in less than six years; it is, however, an approximation to what is attempted in some of the British institutions. We have already noticed the instruments of teaching, and shall proceed to mention the matter of instruction and its division with regard to time, which is assumed to be pretty nearly what is actually accomplished. With regard to a sixth year, were our institutions so modified as to enable the pupils to be kept for such additional time, it would generally be devoted to confirming the pupils in their previous acquirements, to a repetition of subjects of more than common interest, and to special instruction, according to the dispositions and endowments of the pupils, connected with their future destination. In short, it should in every way be made a retrospective year as regards their school acquirements, and prospective as to their future interests.

The subjects for instruction are:—

Language, including nomenclature and syntax.

Writing, as an acquirement, and a means towards higher attainments.

Reading, by dactylology or by articulation.

Religion and morals, preceptal and applied.

Geometry and mechanical drawing.

Geography, physical and political.

Arithmetic, elementary and applied.

Drawing, as an art and in connexion with design.

History, antient (from the Old Testament).

History, modern (of England especially, and exemplary biography).

History, natural (animal, vegetable, and mineral kingdoms).

Physics (properties of natural bodies, astronomy, mechanics, chemistry, &c).

Composition (to induce the ready use and application of language).

The *first year* would be generally devoted to instruction in language by means of natural signs, dactylology, or articulation, and writing. Instruction in numbers and their combinations by sensible objects, by manual notation [DACTYLOLOGY], by figures, and by words. Occasional instruction in moral and religious duties by signs.

Second Year.—Instruction in language continued by the same instruments as in the former year; in arithmetic. Geography commenced with ground-plans of school-room, house, and neighbouring grounds, streets, roads, fields, &c. Lessons on form, introductory to geometry. Moral and religious duties. Composition, commenced by pupils writing down their own observations on facts and occurrences in short sentences.

Third Year.—Language continued; the two former years are chiefly given to nomenclature; syntax will now more especially demand attention. Lessons continued in geometry, geography, arithmetic, physics, and composition. Scripture history and drawing commenced.

Fourth Year.—Language continued, and especially applied to composition. Direct instruction continued on all the subjects named for the preceding year.

Fifth Year.—In addition to bringing the branches of knowledge commenced to a close, abstract ideas and figurative language; doctrinal religion; the human body, its parts and organs; the moral and social duties of man, his dispositions and faculties, should be brought under consideration during this year, and continued for as long a period as the pupil remains under instruction. Those parents who can afford to continue their children as private pupils might have them instructed in every department of a sound English education, and, if they thought proper, qualified for the more liberal arts and professions; for there exists no insurmountable barrier to the acquisition of classical learning, mathematical and scientific attainments, and a knowledge of the modern languages.

The foregoing outline of a course of instruction for deaf-mutes is somewhat similar to what is actually in operation at the Royal Institution of Gmünd, Würtemberg, which is under the direction of M. Jaeger.

After the explanations into which we have entered on the modes and subjects of instruction, no lengthened remarks on the processes seem to be requisite. In teaching substantives the object is pointed out, and the name is written, spelled on the fingers, articulated, or signed, as the medium of communication may be; all these are so many modes for expressing the object referred to. Thus if *man* be the object, it is pointed to, or the word *man* is presented before the eyes of the pupils, or it is spelled by means of the manual alphabet, or it is pronounced, or the beard is touched, and the height of man is indicated. In the same manner other names of objects are conveyed to the pupils, who soon see that a connexion exists between *our* conventional signs and objects, as well as between *their* conventional signs and objects. Adjectives are taught in a somewhat similar way; the colours are as easy as any other qualities to introduce pupils to this class of words. A few wafers, all of the same size but of different colours, are good mechanical aids. When the colours are known the teacher will pass on to other adjectives. The nature of the indefinite article is easily exhibited; the definite can only be acquired by practice, in the manner of hearing and speaking children. Verbs of action are easily imitated by signs, and the pupils are prepared to expect that there are words to indicate *action*, as well as *objects*, *number*, and *qualities*. Adverbs, which indicate the manner of an action, naturally follow verbs; to *run quickly*, to *walk quickly*, to *walk slowly*, may, it will be seen, be accurately conveyed by the means employed to bring instruction so immediately under the cognizance of the senses. The possessive, demonstrative, and personal pronouns are exemplified by real facts which come under the observation of the pupil, or which are purposely contrived to arrest his attention. Many of the prepositions and conjunctions can be rendered sensible and intuitive; other particles are taught by diagrams, and by examples produced as occasion requires, and reproduced by the pupils from instances supplied by themselves. The moods and tenses of verbs, and the auxiliary verbs, can only be taught effectually by the events and casualties which bring them into use in ordinary life; these are constantly occurring, and it is the business of the teacher to turn them to account for the improvement of his pupils. Abstract ideas must be traced downwards to those simple ideas from which they originate; indeed the constant application of analysis and induction, which is continually called forth in conveying instruction as far as may be through a sensible vehicle, renders this office of language more easy than can be conceived by those not accustomed to employ such powerful instruments in the process of education. Figurative expressions, comparisons, similes, metaphors, require a series of progressive lessons, in which language should be employed to illustrate each step from the easiest to the most complicated figures of speech. Examples might be taken from the Scriptures, from fables, allegories, and parables; they should be especially written with a view to utility, and adapted for the explanation of such subjects as occur in any course of education. Though in the plan marked down we have given two years to *nomenclature*, and have not recommended the commencement of *syntax* till the third year, it is not intended that this shall interfere with the pupil's gradual introduction to small sentences expressive of sensible ideas. Indeed the progress in language of a deaf and dumb pupil, to be successful, must be assimilated as nearly as possible to the progress of other children, and he must be continually accustomed to those ordinary exemplifications of language, affirmative, negative, and interrogative, which other children use, and which advance in complexity as their years increase and their minds become enlightened. As the manner and substance of a child's conversations indicate the society in which he has been brought up, and the educational advantages he has received, so will the ordinary remarks and compositions of the deaf and dumb exhibit the benefits they have derived from the means employed to bring them into communion with society, and to elevate their thoughts and understandings to the level of those who labour under no such deprivations.

The public establishments for the reception and education of the deaf and dumb of England are situated respectively at London, Birmingham, Manchester, Liverpool, Exeter, and Doncaster; those of Scotland at Edinburgh, Glasgow, and Paisley; and those of Ireland at Claremont near Dublin, and Belfast. The asylum at London, situated in the Kent Road, was opened in 1792; it was the first asylum in the kingdom for extending to the indigent deaf and dumb the benefit of education, and, from its establishment to the present time, nearly 1500 pupils have been received and educated there. A bust of the Rev. John Townsend, which is placed in the committee-room, perpetuates his memory as the founder of the institution. Two hundred and twenty children reside in the asylum, which receives ample support from the wealthy in all parts of the kingdom; indeed it possesses, besides its annual receipts from subscriptions, donations, and legacies, a funded property of probably not less than 100,000*l.*, by which its permanent income is greatly increased. The instructor of the asylum is Mr. T. J. Watson, a son of the late Dr Watson; he is assisted by twelve male and two female teachers. The whole is under the management of a committee. The cost per head of each pupil is much greater at this establishment than at any other of a similar kind in the kingdom. To an extent this may be accounted for in the greater display which an institution in a wealthy metropolis is expected to make, and also in some measure from the articles of maintenance being dearer than in the provinces.

The second institution which came into operation in this kingdom was that of Edinburgh, which was established in 1810, and at first placed under the care of Mr. Braidwood; he was succeeded by Mr. Kinniburgh, who has continued to conduct the education of the children to the present time with the greatest success. The number of children at present under instruction is sixty. Mr. Kinniburgh has two assistants. The institution has occasionally had to struggle with difficulties from want of funds, and its usefulness has consequently been much circumscribed. Lately, a ladies' association has been formed, whose funds have already placed nine children in the institution; and it is believed that by the means thus brought into operation, all needful help will be afforded for the ordinary wants of the charity.

The general institution for the deaf and dumb at Edgbaston, near Birmingham, was opened in 1814. It was formed in consequence of a lecture on the subject which was read by the late Dr. de Lys before the philosophical institution of Birmingham. This gentleman, and Dr. Alexander Blair, late professor of English literature in the university of London, are to be regarded as the first promoters of the institution. It was placed under the superintendence of Mr. Thomas Braidwood, one of the sons of Mr. Braidwood of Hackney. On the death of this gentleman in 1825, M. du Puget, a Swiss Protestant, and a pupil and teacher in the seminary of Pestalozzi, at Yverdun, was appointed to the charge of the institution. For many years the establishment was confined in its means, but it is now rising into prosperity, extending its buildings, and increasing its number of pupils. About fifty pupils are at present received. M. du Puget has a male and a female assistant; the management of the house is superintended by a matron. The funds are at present rather more than adequate to the expenditure; they are derived from donations, subscriptions, and legacies.

The national institution for the deaf and dumb of Ireland is situated at Claremont near Dublin. It owes its origin and progress to the strenuous and unwearying exertions of Dr. Charles Orpen. Soon after its commencement in 1816, it was placed under the care of Mr. Joseph Humphreys, who has continued to be the instructor to the present time. The number of its pupils was limited during the early existence of the institution, but in consequence of the active operations of numerous juvenile associations during more than ten years, it has now funds and accommodation for the education of about 130 pupils, the number under instruction. Mr. Humphreys is assisted by three male and three female teachers. A workmistress, a shoemaker, a tailor, and a gardener, form also a part of the establishment. These persons instruct a certain number of the pupils in their respective employments. At this institution there is a very complete library of works on the education of the deaf and dumb.

The Glasgow institution, formed in 1819, has had several teachers. Its present master is Mr. Duncan Anderson, whose persevering efforts have raised it to a high degree of prosperity both as to rank and character. It contains sixty pupils. It has no fund more permanent than that derived from payments of pupils, donations, legacies and annual subscriptions. Mr. Anderson has one assistant. The work of the girls is superintended by the matron.

The school for the deaf and dumb at Manchester was opened in 1824. Mr. Vaughan was appointed master; he had been an assistant for several years to Dr. Watson at the London institution. The accommodations of the building were only calculated for 50 children, and in a few years after its establishment many applications for admisssion were annually rejected. A fund has been subscribed for the erection of a commodious building which is now in progress. The death of Mr. Vaughan took place in 1834; his labours and talents have received honourable testimony in that town. The school has been lately committed to the care of Mr. Bingham, a teacher of much experience, at first as an assistant at the Birmingham institution, and afterwards as the master of that at Exeter.

The Liverpool school owes its origin to Mr. William Comer of that town: it was opened in 1825, and commenced as a day-school, but its original plan has undergone some modifications, and its pupils are of the mixed character of boarders, day-boarders, and day-pupils. Several changes have taken place in its mastership; the present teacher is Mr. Rhind, lately an assistant at the London asylum. This school contains 48 pupils.

The West of England institution for the deaf and dumb was established in 1827. It is situated at Exeter. Its especial object is the 'instruction of the deaf and dumb resident in Devon, Cornwall, Dorset, and Somerset.' Like the others it is supported by subscriptions, donations, legacies, and by payments on behalf of the children. Its funds are about equal to the maintenance of fifty children, the number at present in the institution; there are also six pupils who pay liberally for their education. Since the removal of Mr. Bingham to Manchester, the credit of this institution has been amply sustained by his successor, Mr. Gordon. The assistants are one male and one female. The superintendence of the domestic arrangements is confided to a matron.

The Yorkshire institution for the deaf and dumb, situated at Doncaster, is the latest formed in this kingdom. It was commenced in 1829. Throughout its whole course it has been prosperous. Its funds have gradually increased, chiefly in consequence of the exertions of the Rev. W. C. Fenton, its first promoter; it has been enabled to admit every applicant, and for several years a portion of its income has been set aside towards the establishment of a permanent fund. The interest derived from this source at present supplies the annual falling off of subscriptions by deaths and other casualties. Seventy pupils partake of the benefit of the institution, which is under the charge of Mr. C. Baker, and four assistants, two of whom are deaf and dumb. A workmistress has the care of the girls out of school hours, and the domestic arrangements are superintended by a matron.

All these institutions are under the direction of committees chosen from the subscribers residing in or near the towns where they are situated; these committees appoint masters and other officers not chosen at the annual meetings; they establish the general rules of the institutions which they control, but they do not interfere with the course of instruction. One or more examinations of the pupils take place in the course of each year, which the subscribers and the public generally are invited to attend.

In some of these institutions instruction in trades is blended with intellectual instruction; such are those of Dublin and Exeter. In others, industrial occupations are chiefly used as furnishing exercise or a change of employments: of these the institutions of Birmingham and Yorkshire are instances. The schools at Paisley and Belfast are merely day-schools. In most of the institutions there are three classes of pupils; the most numerous are the poor, who are either instructed gratuitously, as at London and Manchester, or who pay a small sum, varying from 2*s.* 6*d* to 3*s.* 6*d.* per week, as at Birmingham, Exeter, and Doncaster. These sums are paid by the parents or friends of the children, or by the parishes to which they belong. In the latter case, it has often been found a difficulty to convince overseers of the policy of educating their indigent deaf and dumb, and thus restoring them to society; but under the operation of the new poor law, section 56 (a clause which was introduced by the Earl of Harewood), the difficulty is in some measure provided for; permission being there given for the advance of sums for the 'deaf and dumb and blind.' The second class of pupils received into our institutions are those whose parents can afford to pay their expenses, so that no burden is in such cases imposed on the funds subscribed for charitable purposes. The payment is generally 20*l.*; this being about the average expense of pupils in the provincial institutions. The third class of pupils are those whose friends can afford to pay a large sum for their education; 80*l.*, 100*l.*, and in some instances more, is the payment required from this class. The number of such pupils being very limited, the masters of institutions are generally allowed this privilege, or a proportion of the income arising from this source is assigned to them.

There are 8000 deaf-mutes in England; the institutions at present in operation are not capable of educating more than 600. It is calculated that at least one-eighth of the whole number are within the age and other qualifications generally prescribed for education. It therefore seems necessary that more extended provisions should be made for their instruction. The densely populated country between the Tees and the Cheviot Hills appears to be an eligible district for the support of a public institution of this kind; and as large towns are in all respects preferable to small ones, offering greater educational advantages and permanent settlements in after-life, the rapidly improving town of Newcastle suggests itself as a proper locality for such an establishment. Another institution should be established in the intelligent and populous city of Norwich, which might include the counties on that portion of our coast. A third desirable point for an institution seems to be Caermarthen, which would take in the whole of Wales, and be conveniently situated for the populous manufacturing counties of Glamorgan and Monmouth. Such is the feeling of interest with which the deaf and dumb are regarded, that it has frequently been only necessary to make known their wants to procure for them that sympathy and aid which their circumstances require.

The adoption of a few simple measures would immediately tend to place the education of the deaf and dumb in this country much higher, and make it more permanent than it has ever been. At present each teacher follows his own plan, for he has no means of learning those of other teachers. The systems are all more or less modified from general principles which have been long known. The matter of instruction and the processes vary in a greater or less extent in different schools, and take their complexion from their respective teachers. The experience of one and the ameliorations introduced into his practice are unknown to all the others. A centre of union is wanted in which the successful expedients of all shall be accumulated. But we do not see how it would be feasible to form such a centre without exciting jealousy and distrust. We have therefore to consider how these institutions might mutually serve each other without endangering that unanimity which it is desirable to preserve among a number of individuals engaged in the same labour of benevolence and charity. The course we would suggest is, that each instructor should draw up an outline, with sufficient detail to make it intelligible, of the branches of study taught in his school; that he should explain generally those processes by which he obtains his results; state the average extent of progress made by pupils in half-yearly or yearly periods throughout the term of education; the portion of school discipline and instruction under his own peculiar charge; and that portion which is confided to the assistants; the arrangements for the management of the pupils when not in school, including physical education and industrial employments. Such outlines would have a direct and immediate tendency to assimilate conflicting systems, and to lead to the adoption of processes which would produce the most satisfactory results. The expense of printing 200 copies of a pamphlet of this nature would be under 5*l.*: it might be transmitted to all institutions, and those left would be sold to visitors, and defray the cost of printing thus incurred. Nearly all the institutions in this kingdom publish a report annually. These reports never hint at methods of teaching, and speak only in very general terms of the results produced, state the difficulties or successes of the preceding year, proclaim the continued good conduct of masters and matrons, sometimes acknowledge their talents and industry, and as a consequence allude to the progress and improvement of the pupils. With such remarks, and a statement of the income, expenditure, list of subscribers, and regulations, the publications we have alluded to are generally filled, and perhaps it is all that is needful to satisfy the public generally and the subscribers in particular. The 'Circulaire' of the Royal Institution of Paris is a very different production. It is designed to accumulate, diffuse, and perpetuate the plans pursued in all institutions in correspondence with it. It is stated in the third circular, that thirty-seven institutions have co-operated with the Paris institution in this labour. Since the commencement of this publication, the institution of New York has published two reports, the sixteenth and seventeenth, which are chiefly devoted to the explanation of the principles and practice followed in that institution; and it is to be hoped that the British institutions will adopt some course by which the intelligence and ability evinced in their management may be more widely diffused. No work exists in the English language worthy of ranking, either in theory or practice, with many in other European languages. In France there are the writings of Sicard, the classic production of Degérando, the practical illustrations of Bébian and Piroux, and the exciting volume of Paulmier. There are besides a host of others, from which much solid satisfaction may be derived. In Germany there are the writings of Wolke, of Daniel, of Venus, of Schwartzer, of Neumann, and many more. We want, in the English language, a full explanation of those principles on which the education of the deaf and dumb rests, and an insight into the philosophy on which such principles are founded. We want also practical lessons, introductory to other school-books, and forming an elementary library or literature for the pupils. No persons are better qualified to write good school-books than those whose practice is founded on a sure theory; the teacher of the deaf and dumb cannot teach *words* alone; an acquaintance with *things* is essential to his pupils' progress; in this respect his instructions are beyond comparison more valuable than those conveyed to the children in the generality of our schools, and his school-books might be introduced into common education with advantage.

The provision for a succession of teachers of the deaf is in our kingdom very inadequate and insecure. The emoluments of principals in the provincial institutions vary from something more than 150*l.* to 350*l.* a year; the assistants receive from 10*l.* to 50*l.* a year, in addition to board. The principals are generally men of education, of acknowledged ability, and of long experience. With one or two exceptions, the principals of the public institutions for the deaf and dumb in the United Kingdom have been engaged in their present occupation from ten to twenty-five years. When such men from any circumstance quit their profession, it would be natural to suppose that their situations would be easily supplied from the number of assistants educated by them; but the difficulties in which several institutions have been placed show the contrary. The committees of the Dublin, the Birmingham, and the Liverpool institutions have at different times experienced such difficulties. Intelligent assistants will not permanently connect themselves to a profession in which the chances of succeeding to a head-mastership are so few. They therefore take the first opportunity to embark in some occupation which promises more satisfactory hopes of advancement; thus the training they have undergone is thrown away; or, it has been, that such assistants are considered too young to be intrusted with the charge of an establishment where both sexes are committed to their control; for the arrangements of the matron are subordinate to those of the master, and much of her power even with regard to the girls must be derived from him. It seems desirable to devise some plan by which the situations of second-masters shall be rendered permanent, and this can only be done by such an increase to their income as shall bind them to their profession. It cannot be expected that committees of institutions should augment these incomes from their funds; they might thus pay a security for services for a series of years, which would never be directly beneficial to the institutions under their management. A few hundred pounds granted annually from the state would at once remove the difficulty, and enable each second-master to receive from 80*l.* to 100*l.* a year, in addition to his board. Fifty pounds a year granted from the government to the second-master of each institution, to be added to his salary after he has attained the age of twenty-one, and provided he has been engaged as a teacher of the deaf and dumb three years, would remove this difficulty, and furnish an intelligent and experienced class of head-masters, whenever vacancies should occur for such appointments. These persons would also, from the facilities they would acquire in imparting knowledge to the deaf and dumb, become admirable teachers in every branch of primary education. They might take departments in normal schools; they might become superintendents or inspectors of districts of common schools; and when such removals took place, their situations in institutions for the deaf would be filled by the junior teachers. Such assistance as this would not interfere with the established plans of any institution; it would cost the government but little, and very great advantage would be derived from it. In some states the entire cost of educating the indigent deaf and dumb is defrayed by the government; in others a large portion of the expense is thus sustained. It does not therefore seem too much to expect that England should contribute towards providing a supply of teachers for an occupation so useful and so important to the well-being of a large number of the community. The noble decree of the king of Denmark is worthy of imitation: 'Every deaf and dumb child born in this kingdom shall receive the education necessary to render him a useful member of society.' The number of institutions for the deaf in Europe, and some particulars, are given in the table below.

Countries.	Population.	No. of Deaf and Dumb.	No. of Institutions.	Pupils under Instruction.	No. received annually.
Portugal	3,815,000	2,407	1	20	
Spain	11,500,000	7,255	1	30	
France	32,000,000	20,189	28	798	159
Italy	20,000,000	12,618	5	147	29
Switzerland	2,000,000	3,976	5	80	16
Austria	26,444,000	16,684	6	197	39
Prussia	12,726,823	8,223	18	314	62
Other German States	9,905,475	8,283	28	410	81
Hanover	1,500,000	946	1	10	2
Holland and Belgium	6,166,584	9,166	5	249	50
Denmark	1,800,000	1,260	2	190	38
Sweden and Norway	3,800,000	2,397	1	40	8
Russia	44,118,000	27,834	2	111	22
United Kingdom	23,365,807	14,328	12	745	149

With respect to the capabilities of the deaf and dumb for instruction, and the means by which instruction may be imparted to them, the following principles are firmly established:—

1. That the deaf and dumb are naturally equal to other persons in their intellectual faculties and manifestations.

2. That these faculties may be developed by means of articulated language, or by natural and descriptive signs, accompanied by writing.

3. That the less important auxiliaries in the instruction of the deaf and dumb are dactylology, writing, drawing, and the use of pictures.

4. That by these means the mother-tongue can be perfectly taught to the deaf and dumb; and,

5. That during instruction in language by the above auxiliaries they may also acquire the elements of an ordinary education.

The suggestions offered in the course of this article, for improving and extending the education of the deaf and dumb, are as follow. We doubt not but the co-operation of philanthropists, committees, and teachers would, in a very few years, effect all these ameliorations.

1. That the schools at present in operation in this country are insufficient for the instruction of the number of deaf and dumb persons ascertained to be within the usual ages of education.

2. That the time necessary for the common education of a deaf and dumb person, according to the experience of those best informed on the subject, is not less than six years.

3. That the education of the indigent deaf and dumb should be made imperative on the parishes to which they belong.

4. That some means, by the press or otherwise, are neces-

sary for making known the principles, the practice, and the experience of the various institutions.

5. That it seems desirable, in order to secure a succession of experienced teachers, that the government of the country should be solicited to furnish means for augmenting the salaries of second-masters in the various institutions.

The following deductions regarding deafness may be assumed to be correct; they are founded not only on the facts communicated at the commencement of this article, but on many other documents, the general accuracy of which cannot be doubted:—

1. That deafness is not always hereditary, though it is found in families, and often among collateral relations.

2. That the diseases to which infants are liable are a fertile source of deafness.

3. That the deaf are in many cases subject to other diseases, the principal being those of a scrofulous tendency.

4. That the manufacturing and agricultural portions of this kingdom appear, about equally, to furnish instances of the calamity.

5. That a perfect system of registration would tend to furnish a correct census of the deaf and dumb, and would exhibit many facts calculated to throw light on some of the causes of deafness.

Note.—There is considerable discrepancy in the statements of the various institutions as to the number of persons born deaf and the number becoming so after birth, as will be seen in the following view:—

	Born Deaf.	Became Deaf.	Uncertain.	Total.
Paris . . .	52	37	13	102
Yorkshire . .	75	26	9	110
Dublin . .	423	66	—	489
Hartford, Conn.	116	135	28	278

American Institutions.—The first institution for the deaf and dumb in America was established at Hartford, Connecticut, in the year 1817. It originated in the desire of the late Dr. Cogwell, to promote the education of his own daughter, who was deaf and dumb. The first instructor at this institution was the Rev. T. H. Gallaudet, whose useful publications for children have been widely circulated in this country. He visited the institution at Paris, then under the charge of Sicard and Bébian, and on his return to America he was accompanied by Mr. Clerc, who was at that time the 'glory and support' of the institution at Paris. The early instructors of the institution at Hartford were men of high literary reputation: among them were Mr. W. C. Woodbridge, the editor of the 'American Annals of Education,' Mr. Lewis Weld, for some years the instructor at the Philadelphia institution, and at present the principal of the Hartford institution, and Mr. Harvey P. Peet, the present principal of the New York institution. The Hartford institution has also supplied instructors to all similar establishments in the United States. For several years the number of pupils instructed in this institution has been 130. We find from the seventeenth report (May, 1833), that 25 pupils were supported by their friends; 38 by the state of Massachusetts; 20 by Vermont; 16 by Connecticut; 15 by New Hampshire, and 16 by Maine. There are eight assistant-teachers in addition to the mistresses who conduct the education of the girls in female duties and occupations.

The New York institution was commenced in 1818. It had at first to contend with differences of opinion as to the system of instruction, and several changes of masters were the consequence of this indecision. In the year 1827 the legislature of New York, by which the institution was chiefly sustained, authorized Mr. Flagg, the superintendent of common schools of the state, to visit this and other institutions, and to compare the results of the different systems of instruction. Mr. Flagg therefore visited the schools at New York, Hartford, and Philadelphia, and in his report he gave a decided preference to the system of the two latter institutions, and he recommended the directors to engage an instructor acquainted with the improved modes of teaching there pursued. Mr. H. P. Peet was accordingly engaged as principal of the New York institution, and the school is at present conducted by him with great ability. There are seven teachers, a matron, an assistant-matron, and five instructors in trades. The trades, which are taught in the intervals of school-hours, are those of a cabinetmaker, a shoemaker, a bookbinder, a tailor, and a gardener. One hundred and forty pupils partake of the benefits of the asylum, of whom 102 are supported by the state of New York; 9 by the corporation of New York; 2 by the commissioners of the Alms-House, New York; 7 by New Jersey; 6 by the institution; 1 by the supervisors of Duchess County, and 13 by their friends. (See 17th *Annual Report*, 1836.) The reports of this institution are of a highly valuable nature; for, independent of their local and temporary interest, they contain some of the best essays in the English language on the practical instruction of the deaf and dumb. The building occupied by this institution is both splendid and convenient; it is surmounted by an observatory, which is 70 feet above the ground, and which commands an extensive prospect. The institution possesses a library of works on the instruction of the deaf as ample as can be procured at the present time, in the collection of which neither expense nor labour have been spared. The circular issued by the directors on the course and manner of instruction is an interesting and satisfactory document. The principals of the New York and Hartford institutions are not personally occupied in the work of instruction. The different classes are each under the care of a separate teacher, and the principal gives a general superintendence to all, and regulates the internal economy of the institution. The article on the Instruction of the Deaf and Dumb in the 'North American Review' (No. 83) is understood to have been written by Mr. Barnard, one of the teachers of the New York institution.

The Pennsylvania institution was opened at Philadelphia in 1824; it was organized by Mr. Clerc, and placed under the direction of Mr. Lewis Weld, from the Hartford institution, who, in 1830, was recalled to take the charge of that institution, on the resignation of Mr. Gallaudet. Since that time the Pennsylvania institution has been ably conducted by Mr. A. B. Hutton. The trades taught are weaving, shoemaking, and a few branches of carpentry. Mr. Hutton is assisted by six other teachers, two of them being deaf and dumb, and former pupils of the institution. The directors, in their thirteenth report, state that one supernumerary teacher is employed to guard against the inconveniences which result from the occasional loss of experienced teachers. The state of Pennsylvania provides for the support of 50 indigent pupils for five years, it also provides the more needy with clothing. Maryland supports 20; New Jersey 6; and a few are received from Virginia and other southern states. A few years ago 20,000 dollars were bequeathed to this institution by the will of Stephen Girard, the founder of Girard College.

The Kentucky asylum is situated at Danville, Mercer county: it was opened in 1824. Mr. J. A. Jacobs is its master; he has one assistant and 25 pupils. A certain number of these are supported by the state of Kentucky. This institution was endowed by an act of congress with a township of land in Florida, but, up to the present time, this endowment has yielded a very trifling revenue. Mr. Jacobs has published a most useful series of practical lessons for the deaf and dumb.

In the state of New York a second institution has existed since 1824 at Canajoharie, Montgomery county. The act of legislature in its favour expired in 1836, and it is expected that the pupils will either be transferred to the New York institution, or to a new institution, to be created farther west in the state. Mr. Dix, the superintendent of common schools, recommends the former plan in his report to the legislature. (See *Appendix to* 17th *Annual Report, New York institution.*)

In 1829 an institution was commenced at Columbus, Ohio. It is partly supported by funds supplied by the state and partly by the payments of pupils. The principal is the Rev. H. N. Hubbell. There are 50 pupils, who are received between the ages of 10 and 30, and four deaf and dumb teachers, who were all educated at Hartford. The State of Ohio supports 48 pupils.

At Quebec, Lower Canada, there is an institution for the deaf and dumb, under the charge of Mr. M'Donald, who tudied the system of instruction under the Hartford institution. There are also institutions at Mexico and Calcutta.

DEAFNESS, the sense of hearing diminished or abolished. Deafness is either congenital or acquired. When congenital, it arises from an original malformation of the ear, and is then always accompanied with dumbness. When acquired, it arises from a variety of diseases affecting different parts of the complex apparatus connected with the sense of hearing. Some parts of this apparatus are placed beyond the reach of examination, and the function of other parts is but imperfectly known; so that it is often difficult to ascertain the exact seat of the disease; still more difficult to ascertain the exact nature of the disease, and even when this is discovered, more difficult than all to apply an effectual remedy. Hence the study and treatment of deafness are attended with peculiar difficulties; yet the subject has by no means engaged such a share of the attention of the scientific surgeon and physician as its importance deserves.

Deafness may arise from disease of the organ of hearing, or from disease of the brain. The organ of hearing consists of two parts, that destined to collect and transmit sound to the auditory nerve, and that composed essentially of a peculiar arrangement of the sentient extremity of the auditory nerve destined to receive sound and to transmit the impressions to the brain.

That part of the apparatus whose office it is to collect sound is termed the auricle, or the external ear—the ear commonly so called. From the auricle proceeds a narrow winding passage, termed the external auditory passage (*meatus auditorius externus*), which is closed at its farthest extremity by a membrane called the *membrana tympani*, or the drum of the ear. Beyond the membrana tympani is the cavity of the tympanum, which is a chamber of air, containing a curious and complex apparatus, put in motion by the vibrations of the air that produce sound. These vibrations are communicated to the internal apparatus by the membrana tympani, or drum of the ear, and, variously modified by that apparatus, and communicated to the air in the chamber of the tympanum, are conveyed to the internal organ, or the ear properly so called. Besides all this there is the passage called the Eustachian tube, which leads from the throat to the cavity of the tympanum. All these parts of the ear are subject to various diseases, any one of which is capable of impairing in a greater or less degree the sense of hearing, or of producing deafness.

Any considerable malformation of the auricle, or external ear, whose office it is to collect the vibrations of the air that produce sound, is found to occasion a greater or less degree of deafness. But the external auditory passage is lined by a vascular and highly sentient membrane, studded with organs of secretion, by which are elaborated the cerumen, or wax, with which the passage is kept in a state of moisture, and by which it is defended from the entrance of external bodies. A certain quantity and a certain quality of this secretion are indispensable to a sound condition of the function of hearing. If the secretion be diminished or suppressed, the hearing becomes extremely imperfect; if it be increased and thickened, the hearing may become altogether abolished. The quantity and quality of this secretion may be changed, in either of these modes, by many diseases; by inflammation, for example, induced by the application of cold and other causes. Accordingly, a vitiated state of the secretion of the wax, which may be accumulated in such a degree as completely to block up the passage, and so to prevent the transmission of sound to the internal ear, is among one of the most common causes of deafness. But inflammation may pass into ulceration; purulent matter may form, collect, and completely obstruct the transmission of sound. Moreover, morbid growths, as polypi, may spring from the lining membrane of the meatus, and plug up the passage. In these different modes there may be a complete obliteration of the auditory passage. This obliteration of the auditory passage is ordinarily attended with the total abolition of the sense of hearing; yet cases are on record in which the canal has been reduced to less than a line in diameter, and in which its walls at different points have even touched, without a great degree of deafness having resulted. In these cases, instead of deafness, there has been a constant noise or buzzing in the ear. Occasionally, though very rarely, there is the opposite state of the auditory passage; it is preternaturally enlarged; in one case it was so much enlarged, that the ring-finger could easily penetrate to the bottom of the canal. Deafness equally resulted from this enlargement of the auditory passage as from its obliteration.

The diseases of the auditory passage may be communicated to the membrana tympani, which may be inflamed, thickened, ulcerated, and rendered wholly incapable of performing the office of transmitting sound. It has been observed to acquire a thickness as great as that of the sclerotic coat of the eye, by a successive deposition of adventitious membranous layers. It is then of a yellowish colour, and quite opaque. Deafness often coincides with this altered condition of the membrana tympani; but it is doubtful whether, if this be the sole affection, it be capable of abolishing the sense of hearing.

The membrane which lines the chamber of the tympanum may partake of the diseases of the parts of the auditory apparatus which are external to it, or it may itself be the primary seat of disease. It may become inflamed and thickened, in consequence of which the capacity of the chamber for containing air must be proportionally diminished. The fluid commonly secreted by its membrane may be increased in quantity and vitiated in quality, and this increased and vitiated liquid may occasion deafness by the exclusion of air from the chamber. Such an altered secretion occurs chiefly in children and young persons whose mucous secretions in general are easily deranged This accumulation may take place without any pain in the ear, without any discharge of fluid from the ear, and without any appreciable lesion of the auditory passage. It may be suspected to be the cause of deafness when the sense of hearing varies materially at different periods of the day; when the deafness is greatest in the morning, and is suddenly and manifestly increased by a damp day, or by exposure to a cold and humid atmosphere. There may also be an accumulation of pus or of blood in the chamber of the tympanum. Pus may be suspected to be accumulated in the tympanum when deafness follows severe pain in the internal ear, attended with other signs of inflammation; and when inflammation and ulceration of the auditory passage are either absent, or exist only in a slight degree. Blood may be suspected to be contained in the chamber when deafness follows a severe blow on the head in the neighbourhood of the ear; or a fall, or any cause by which a preternatural quantity of blood is determined to the head. Whether the cavity of the tympanum be obliterated by an increased secretion of the fluid which moistens its walls, or by an accumulation of pus, or of blood, the effused matter is often spontaneously removed by absorption, and the sense of hearing gradually returns as the process of absorption goes on.

One of the conditions essential to the sense of hearing is a free passage of air to the chamber of the tympanum through the Eustachian tube. But the diameter of this tube may be diminished or wholly obliterated by an accumulation of the mucus which moistens its internal surface, by the thickening of its lining membrane, and by the adhesion of this membrane at different points. The entrance of air into the Eustachian tube may also be obstructed by various diseases of the throat, as inflammation attacking the soft palate and the tonsils, the consequent enlargement of the tonsils, which may cover and completely close the opening of the Eustachian tube. The inflammation may also spread from the throat into the Eustachian tube; hence the pain in the ear and the deafness which so often accompany severe sore throat.

The internal ear, or that part of the auditory apparatus in which the impression of sound is received, the true and proper ear, is, without doubt, subject to its own diseases; and it is probable that a very slight change in this delicate structure is sufficient to occasion deafness. But this organ is placed so far beyond the reach of examination, and the function of its different parts is so little understood, that its morbid changes, as the causes of deafness, are alike obscure during life, and difficult to be appreciated by inspection after death. The same is true of the diseases of the nerve which transmits the impression from the internal organ of hearing to the brain, and of the diseases of the brain itself. We know that it is indispensable to the sense of hearing that this part of the auditory nerve be sound, and that that portion of the brain with which the auditory nerve is in immediate communication be sound; we know that the auditory nerve and the brain are both subject to numerous diseases which impair or abolish their functions. The substance of the nerve may be diseased, or a tumour may press upon it in some part of its course to the brain; the brain may be diseased,—inflamed, softened, hardened, oppressed by the effusion of water, lymph, pus, blood, or by the growth of tumours in its substance, occasioning general diseases, the most severe to which the body is subject, as phrenitis, hydrocephalus, epilepsy, apoplexy, &c. Among the local morbid phenomena produced by these diseases, deafness is always one. Often also this malady immediately follows repelled cutaneous eruptions and retrocedent gout, and it is the frequent concomitant of fever. In all these cases deafness is the consequence either of disease of the brain, or of disordered secretions of the auditory apparatus, or of both conjoined; and the hearing always returns as these diseases diminish and disappear.

When deafness arises from inflammation of the auditory passage, the deafness can be cured only by the removal of the inflammation, which must be treated according to the principles proper for the treatment of inflammation in any other part of the body. When deafness results from a disordered action of the follicles which secrete the wax, it is often removed by introducing into the auditory passage, night and morning, a dossil of cotton, containing some stimulating substance, as camphor, ammonia, or alcohol, suspended in almond-oil. When the auditory passage is loaded with hardened wax, the ear should be syringed night and morning with warm milk and water, or soap and water. When polypi grow from the lining membrane of the passage, they must be removed by a surgical operation, and the proper precautions taken to prevent, or the proper remedies employed to remove, inflammation. When there flows from the passage an acrid or fetid discharge, the ear should be cautiously syringed night and morning, and counter-irritation kept up by repeated blisters behind the ear, or by a perpetual blister, caused by daily dressing the vesicated surface with unguentum lyttæ. When the deafness arises from a diminished secretion of wax, good effects have often been experienced by the employment of galvanism, which is found not only to occasion a grateful warmth in the meatus, but also considerably to augment the secretion of wax. When deafness arises from inflammation of the membrane which lines the chamber of the tympanum, and from the consequent thickening of the membrane, or the effusion of fluid into the cavity, the most effectual remedies are blisters behind the ears and active purgative medicines. When closure of the Eustachian tube is the cause of deafness, the imperfection of hearing is often immediately removed by perforating the membrana tympani, this operation immediately establishing a free communication of air to and from the tympanum. When deafness is the consequence of disease of the auditory nerve, or of the brain, the nature of the nervous or cerebral affection must be discriminated and ascertained before any remedy can be applied with the slightest chance of success; and even when this is accomplished, it is too often only to satisfy us that the disease is beyond the reach of art.

DEAL, a borough, market-town, and parish, in the hundreds of Cornilo and Bewsborough, in the county of Kent, and a member of the town and port of Sandwich as a Cinque Port. It is situated close to the sea, on a bold open beach, between the north and south Forelands, eighteen miles south-east from Canterbury, and seventy-two E. S. E from London. The number of inhabitants in 1831 was 7268, who live for the most part in the three streets lying parallel to the beach, which, in distinction from the middle and upper parts, are called Lower Deal. By a decree of Henry III., in 1229, and by letters patent of the sixteenth y Henry IV., the town is shown to have been at that annexed to the Cinque Ports. A charter was grant the 11th of William III. constituting it a borough, corporation, consisting of a mayor, twelve jurats, 24 con council men, a town clerk, and recorder. On the side is a strong castle, erected in 1539 by Henry with a moat and a drawbridge. There is no harbou the fine roadstead called the Downs, between the shor the Goodwin Sands, is a usual place of anchorage for v of all dimensions, of which, occasionally, four or five dred are riding windbound, and with safety, except d heavy gales from the north and east, when some put Ramsgate for greater security. The pilots of Deal h high character as intrepid and excellent seamen in affo assistance to vessels in distress. The town is paved, lig and watched, and contains a custom-house, a naval house, a naval and military hospital, and a gaol. Th habitants are chiefly engaged in boat-building, sail-ma and other pursuits subservient to maritime business sides a church and chapel of ease, there are several senting chapels, and a subscription school for ninety boys and girls. Markets are held on Tuesday and F and two small fairs in April and October. Deal i birth-place of Mrs. Elizabeth Carter, the learned tran of Epictetus. [CINQUE PORTS.] (Brayley and Bri *Beauties of England*, vol. viii., p. 1018; *Municipal C ration Report*, part ii., p. 931.)

DEALS (German, *dielen*; Dutch, *deelen*; Danish, *d* Swedish, *tiljar*; French, *planches minces*: Italian, *ta* Russian, *doski*.) Deals are boards of fir above 7 inch width, and of various lengths exceeding 6 feet. If than 7 inches wide they are called battens, and when 6 feet long they are called deal-ends. The deals imp into the United Kingdom are brought from Prussia, Sw Norway, and Russia in Europe, and from our pri North American colonies. The following statement, piled with much care by the inspector-general of im and exports from the entire importation of the year will show the average dimensions of deals, the produ various countries, the cubical contents of the great dred (120), and the rate of duty chargeable upon the portation of each class. The dimensions within each scale of duty is chargeable, are—

Deals. per
6 feet and not above 16 feet long, not exceeding 3½ inches thick, £1
16 „ „ 21 „ „ 3½ „ 2
21 „ „ 45 „ „ 3½ „ 4
Above 45 ft. in length, or above 3½ in. thick, the load of 50 cubic feet, £
and further, the 120 . .

If of the growth of British possessions in America—

6 ft. and not above 16 ft. in length, not exceeding 3½ in. thk., per 120, £
16 „ 21 „ 3½ „
16 „ 21 „ and exceeding 3½ „
exceeding 21 ft. in length, not exceeding 4 „
„ 21 „ and exceeding 4 „

Deal-ends.	From Europe.	From Am Colon
Under 6 ft. long, and not exceeding 3½ in. thick, the 120,	£6	£0 1
„ 6 „ and exceeding 3½ „ „	12	. 1

DEALS FROM EUROPE.

	Average dimensions.			Russia.	Prussia.	Sweden.	Norway.	Total from the preceding countries.
	Length.	Thickness.	Width.					
	feet.	inches.	inches.	gt. hunds.	gt. hunds.	gt. hunds.	gt. hunds.	gt. hunds.
1st Class, paying duty £19 per Gt. Hundred.								
From Russia and Prussia . . .	15	3	11	1,897	1,314	1,548	4,138	8,897
Sweden	15	3	10					
Norway	15	3	9					
2nd Class, paying duty £22 per Gt. Hundred.								
From Russia and Prussia . . .	19	3	11	13,635	2,043	1,891	549	18,118
Sweden	19	3	10					
Norway	19	3	9					
3rd Class, paying duty £44 per Gt. Hundred.								
From Russia and Prussia . . .	40	3	11	6	415	—	—	421
Sweden	40	3	10					
Norway	40	3	9					
Total of Importations in Gt. Hundreds . .	..	..	..	15,538	3,772	3,439	4,687	27,436
Ditto ditto converted into loads . .	..	..	..	158,268	41,320	29,574	32,635	261,797
Average cubical contents of the Great Hundred of deals—loads and feet	..	..	..	10.9	10.48	8.30	6.48	9.27
Average rate of duty per load actually paid . .	..	..	..	£2 2 6	2 2 8	2 8 0	2 15 7	2 4 9

DEALS FROM BRITISH AMERICA.

	Average dimensions.			
	Length.	Thickness.	Width.	
	feet.	inches	inches.	gt. hunds.
aying duty £2 per great hund.	12	2½	9¼	18,695
,, £2 10 ,,	19	3	11	837
,, £5 ,,	40	4	10	30
otal importation in great hundreds				19,562
itto ditto converted into loads . . .				107,228
verage cubical contents of the great hundred of deals—in loads and feet . .				5.14
				s. *d.*
verage rate of duty per load actually paid . . .				7 4¼

ffect of this method of charging duties, viz., to xed rates upon all deals within given dimensions, n to interfere greatly with the natural course of When the duty was charged at a fixed rate per ındred without reference to dimensions, and when y was on a moderate scale, it was the practice in l-producing countries to cut deals of those dimen- iich would produce the greatest cubical quantity of ood from each tree, and it then rarely happened ls were longer than 12 feet, but when the duty was increased, and it was charged according to their ons in classes with varying intervals, as shown in going scale, it became an object to introduce as ood as possible at each specific rate of charge, and much regard to economy in cutting. This will be apparent when it is seen that under the present duty, a deal brought from Europe 12 feet long and s wide, pays a duty equivalent to 57*s.* 6*d.* per load ıbic feet, while a deal of the same length, but 2 arrower, pays at the rate of 70*s.* 4*d.* per load; and on 6 feet long and 11 inches wide, the charge is equal 13*s.* 2*d.* per load. It will be equally apparent that ate of duty forming a large per-centage upon the t of the article, no person will import any deals ıort of each of the maximum dimensions admissible rate of duty, but will sacrifice a part of the material cessary, in order to escape a higher rate of charge; means the cost is necessarily enhanced to the con-

The same motive does not operate with respect to r taxed deals of the English colonies, nearly the which are accordingly brought of such dimensions duty amounts to one-third more upon the cubical than it would amount to if the importers availed ves of the provisions of the law in the way adopted mporters of European deals. It will be seen that charged upon the deals of Sweden, and still more ose of Norway, is, by the working of the system, igher than upon the shipments from Russia and ; this arises partly from the different sizes to which s grow in the respective countries, and partly from culty experienced in Sweden and Norway in con- the trees after they are cut down rapid or narrow the places of manufacture. In France, where the n timber are low, deals are imported of all sizes o the convenience of the producers, and conse- the price is lower to the consumer: besides which, lity of the wood is in some instances better, because deals than are brought to England may be cut from part of the tree nearest to the sap, and these are tually excluded from our markets. The deals of America are inferior in strength and durability to ought from the north of Europe, and to these the ice is usually given for the flooring of houses and urposes where durability is of importance. In smaller houses, where cheapness is the principal ation, Canadian deals are used. For small articles, mouldings, picture-frames, hat-boxes, musical in- its, as well as for many of the internal fittings of and other purposes which call for the employment that can be easily worked, Canada deals are pre-

fault has been found with the present scale of luties, because encouragement is given by it to the tion of deals over that afforded to the introduction mber out of which the deals are cut, but among all s attending the present system of duties, this one is not to be reckoned, inasmuch as the true interest of the consumer is best consulted by giving that greater encouragement to the importation of deals. In its natural form the timber could not be brought in a state fit for sawing. If the deal be not cut from the log as quickly as possible after this is felled, the grain of the wood will open, and it will be full of splits, or what is called shakey, and if afterwards cut into thin boards they will be fit for nothing. The splits or fissures here noticed are not of equal detriment to timber in the log, which is sawn into large scantlings to be used for beams, rafters, and quartering: from the moment the saw has divided the log into thinner pieces the tendency to split is at an end.

The quantity of deals and deal-ends imported from the north of Europe and from the British American colonies respectively in each of the last 10 years, has been as follows:—

	From Europe. Great hundreds.	From America. Great hundreds.	Total. Great hundreds.
1827	37,910	12,084	49,994
1828	33,892	15,730	49,622
1829	33,332	18,256	51,588
1830	30,551	19,653	50,204
1831	32,848	22,067	54,915
1832	25,210	26,053	51,263
1833	24,823	30,975	55,798
1834	33,105	34,000	67,105
1835	27,492	34,239	61,731
1836	31,865	37,388	69,253

The demand for timber in the United States of America has of late much increased, owing to increasing population on the one hand, and the progressive diminution of the forests in the settled states on the other. Under these circumstances measures are in progress on the part of the United States' government which will encourage the transmission of timber in all its forms across the river St. Lawrence to a degree which may materially interfere with the power of Canada to supply this country on the same scale as heretofore.

DEAN, French *Doyen*, and in Latin *Decanus*, a word which on a first view would be thought to be allied to DEACON, but which has probably a different origin. Etymologists seem not to be agreed concerning the etymon; but the most usual origin assigned to it is the word *decem*, ten, as if a dean were a person who presided over collective bodies of men or things, in number *ten*. This we regard as very uncertain.

Dean, however, is a term of ecclesiastical presidency. In Scotland it is used for the head of lay communities, but in England we believe it is exclusively confined to promotions or presidencies spiritual.

In England there are three classes of ecclesiastical presidencies to which the title dean belongs.

1. *Deans rural.*—It will be seen that in all the books which treat of the ecclesiastical divisions of the country, the dioceses are divided into archdeaconries, and the archdeaconries into deaneries, below which there is no other subdivision till we come to parishes, the minutest of the proper ecclesiastical divisions of the country. The whole country is thus divided, with the exception of certain districts of no great extent, which claim to be exempt jurisdictions.

Those who contend for the derivation of the word dean, whence deanery, from decem, suppose that originally there were *ten* churches or parishes forming each of these deaneries. This is a very obscure point, and it is equally uncertain at what time this distribution of the dioceses was made. It appears, however, that there were deaneries before the Norman Conquest.

In each of these deaneries there was a clergyman who was dean; he was usually a beneficed clergyman within the deanery. His duties were to exercise a superintendency over the clergy, to preside at their assemblies, and to be the medium of their communication with their spiritual superiors. He had his public seal. He appears also to have discharged those duties which are now performed by clergymen called surrogates.

By degrees this office in the English church fell into disuse. The history or the reason of its decline is not very well known, for the advantage of having such an officer, especially where the archdeaconries were extensive, must have been always evident. The office, however, did by degrees disappear in one diocese after another, till it became totally lost. There was a dean of Chalke, in the diocese of Salisbury, as late as the reign of Charles the Second; and a dean of Doncaster, in the diocese of York, in the reigns of George the First and Second.

Attempts have been made to revive it. Berkeley, bishop of Cloyne, tried to establish the office again in Ireland; and soon after the late Dr. Burgess was made bishop of Salisbury, he did actually revive the office in that diocese, appointing Mr. Dansey, the rector of Donhead St. Andrew, rural dean of Chalke: this was in 1825. The Report of the Ecclesiastical Commissioners, 1835, under the head Territory, recommends that each parish shall be assigned to a deanery, and each deanery to an archdeaconry.

Whoever desires to see more concerning the constitution and office of the rural dean will be amply gratified by referring to a work, in two volumes quarto, entitled 'Horæ Decanicæ Rurales, being an attempt to illustrate by a series of notes and extracts the name and title, the origin, appointment, and functions, personal and capitular, of Rural Deans, by William Dansey,' &c., 1835.

The office existed in other parts of christendom.

2. *Dean in a Cathedral Church.* [See CANON.] The canons who formed the bishop's council were presided over by a dean; this has been the case from the remotest times. *Decanus et Capitulum* is the form in which all the acts of such communities run.

Antiently the deans were elected by the chapters: but here, as in other points, the royal power has encroached on the privileges of the church. Now the form is for the crown to issue a *congé d'elire*, naming the person whom the chapter is to choose, in the bishoprics of antient foundation; while, in the bishoprics founded by Henry the Eighth, the king names the dean by his letters patent merely. In the former case the bishop is called in to confirm the election, and he issues his mandate for the installation of the person elected.

3. *Deans in Peculiars.*—There are in England certain ecclesiastical promotions, in which the person holding them is called by the name of dean, and they seem to have all had antiently, as some of them have now, capitular bodies connected with them, and in all there is something peculiar in their reference to their spiritual superiors, and in the jurisdiction exercised by them. We cannot descend into the particular character of each of these officers, and shall content ourselves with naming the principal of them: the dean of Westminster; the dean of the chapel of St. George, of Windsor; the dean of Christ Church, Oxford; the dean of the Arches; the dean of the King's Chapel; the dean of Battel; the dean of Bocking; the dean of Middleham, &c. If the history of these foundations were traced to their origin, it would be seen that they were ecclesiastical establishments, mostly of royal foundation, possessing peculiar privileges and a peculiar jurisdiction, which escaped dissolution when the framework of the ecclesiastical institutions of England underwent some alteration at the time of the Reformation.

DEATH-WATCH. Every one has heard of the death-watch, and knows of the superstitious notion of the vulgar, that in whatever house its drum is heard, one of the family will die before the end of the year. These terrors, in particular instances, when they lay hold of weak minds, especially of sick or hypochondriac persons, may cause the event that is supposed to be prognosticated. A small degree of entomological knowledge, however, would relieve them from their fears, and teach them that this heart-sickening tick is caused by a small beetle giving a call to its companion.

Authors were formerly not agreed concerning the insect from which this sound of terror proceeded, some attributing it to a kind of wood-louse, and others to a spider; the earliest scientific account of it is probably that by Mr. Benjamin Allen, written in 1695, and published in the Philosophical Transactions, vol. xx., p. 376, where the writer calls it *Scarabæus galeatus pulsator:* followed, vol. xxii., p. 832, by another account from the celebrated Dr. William Derham, dated Upminster, July 21, 1701. Swammerdam (*Bibl. Nat.*, edit. Hill, i., 125,) and Shaw (*Nat. Misc.*, iii., 164,) have also written upon this insect. It is a received opinion now, adopted upon satisfactory evidence, that the sound called the death-watch is produced by certain beetles belonging to the timber-boring genus *Anobium*. Latreille observed *Anobium striatum* to produce the sound in question; but the species whose proceedings have been most noticed by British observers is *Anobium tessellatum*. When spring is far advanced, these insects commence their ticking, which, as already mentioned, is only a call to each other, to which, if no answer be returned, the animal repeats it in another place. It is thus produced: raising itself upon its hind legs, with the body somewhat inclined, it beats its head with great force and agility upon the plane of position; and its strokes are so powerful as to make a considerable impression if they fall upon any substance softer than wood. The general number of distinct strokes in succession is from seven to nine or eleven. They follow each other quickly, and are repeated at uncertain intervals. In old houses, where these insects abound, they may be heard in warm weather during the whole day. The noise exactly resembles that produced by tapping moderately with the nail upon the table; and when familiarized, the insect will answer very readily the tap of the nail. (Brand's *Popular Antiq.*; Kirby and Spence's *Introd. to Entomology*, edit. 1828, i. 36; ii. 382; Wallis's *Hist. Northumb.*, i. 367.) The superstition that the clicking of this insect is a death-omen is mentioned by Baxter in his 'World of Spirits,' p. 203.

DEBENTURE (Latin, debentur, from debeo, to owe), formerly written debentur, is a kind of certificate used at the Custom House, which entitles a merchant exporting goods upon which a drawback or bounty is allowed to receive payment. (As to drawback or bounty see 3 & 4 William IV., cap. 58, sec. 86, 87.)

The word has been used in some acts of parliament to denote a bond or bill, by which the government is charged to pay a creditor or his assigns the money due on auditing his account. Debentures were used to secure the arrears of pay to the soldiery during the Commonwealth, and are mentioned in the Act of Oblivion, 12 Car. II., cap. 8. They are in use now in the receipt of Exchequer and Board of Ordnance, and it is believed in the king's household. (Cowel's *Interpreter*; M'Culloch's *Commercial Dict.*)

DEBRECZIN, or DEBRECZYN, a royal free town in the western part of Upper Hungary, is the capital of the county of Bihar, and the largest town in the kingdom, Pesth only excepted. It lies in 47° 32′ N. lat., and 21° 36′ E. long., in the centre of an extensive sandy plain, which stretches from this neighbourhood through the counties of Bihar and Szabolts, and is known by the name of the 'Debreczyne Heide.' The southern part of this great plain in the vicinity of Debreczin has been brought into a state of high cultivation, and produces abundant crops of wheat, buckwheat, millet, and water-melons: it also affords pasturage for cattle and sheep. The town is open, and has a rustic appearance; for the houses, which are about 4000 in number, seldom exceed one story in height, and are as humble in their exterior as common cottages. Including the three suburbs, from which it is separated by a slight pallisade, Debreczin contained, in 1816, 38,962 inhabitants, and now has about 45,370, of whom about 43,800 are of the Protestant church. The country being destitute of stone, the streets are unpaved, and the foot-passenger has consequently to wade either through mud or sand, according to the season of the year, with the aid of a few planks, laid down for crossing the streets. It is the seat of civil administration (*Districht-Gerichts-Tafel*) not only for the county, but for the province 'on this side of the Theiss,' and is the occasional place of meeting for the provincial assemblies of the county. Debreczin has several handsome buildings, among which are the town-hall, the Protestant and Roman Catholic churches, the Franciscan and Piarist monasteries, and the handsome Protestant Collegium, which is conducted by six professors, and attended by 600 students, and to which a small church and a library of 20,000 volumes are attached. There is also a Roman Catholic gymnasium, a school of design for mechanics, &c., an orphan asylum, three dispensaries, three hospitals, and a house of correction. Nor must we omit to notice Councillor Fay's fine collection of paintings and engravings. Independently of agricultural pursuits, the inhabitants derive their subsistence from numerous manufactures, principally of coarse woollens, sheepskins, pottery, leather, saltpetre, and soap. The manufacture of tobacco-pipes amounts to about eleven millions per annum, and employs two classes of artificers, one for turning the mouth-pieces out of horn, and the other for fashioning the heads out of red or black clay. Debreczin manufactures also knives and other cutlery, combs, buttons, pearl necklaces, &c. Its central position between Transylvania and the north and west of Hungary affords it a ready vent for its various products: this is also facilitated by four periodical fairs, which are held in wooden booths outside the town, and are the resort of buyers and sellers from all parts of the kingdom. They are a great market also for the linens and other fabrics of Germany. Debreczin is noted for the excellence of the bread, as well as the immense loaves, made by its female bakers. It suffers greatly from want of water in summer. The yearly income and expenditure is about 137,000*l.* (1,500,000 guldens.)

DEBT, ACTION OF, lies for the recovery of a sum certain, or capable of being ascertained, due upon bond, specialty, or simple contract, or upon the judgment of a foreign or colonial court. It may also be maintained against a gaoler for the escape of a prisoner in execution, or upon a statute by the party grieved, or by common informer. Previous to 3 & 4 William IV., cap. 42, sec. 13, the defendant in an action of debt upon a simple contract (except for rent) was allowed to wage his law, for which reason the action of indebitatus assumpsit [Assumpsit] was frequently preferred; but now the action of debt is the better remedy in such cases, the judgment being final in the first instance. The action of debt will not lie for money due by instalments till all the days are past, unless the payment be secured by a penalty, or the amount to be paid on each day be specified; nor can debt be supported against an executor or administrator upon a simple contract of his testator or intestate, because as they are presumed to be ignorant of his contract they cannot wage their law: though this distinction is still observed, it has been judicially declared not to be founded in good sense. Where, however, the deceased would not have been allowed to wage his law, as in actions in the Court of Exchequer, in London (by the custom), &c., debt is maintainable against executors and administrators. (Selw. *Nisi Prius*; Saunders's *Reports.*) [Damages; Pleading.]

DEBT, NATIONAL. [National Debt.]

DECAGON, a figure of ten sides; but the term is most commonly applied to an equilateral and equiangular decagon, or a *regular* decagon.

The side of a regular decagon inscribed *in* a circle is ·6180340 of the radius; and of that about a circle ·6498394 of the radius. Similarly, the radii of the circles inscribed in and circumscribed about a decagon are 1·5388418 and 1·6180340 of the side. The area of a decagon is 2·938927 of the square on the radius of the circumscribed circle, or 7·694209 of the square on the side.

DECANTATION, an operation often resorted to both in common life and in chemical operations; it is the action of pouring off the clear portion of a fluid from that which contains suspended impurities, or from the impurities themselves when they have perfectly subsided. Sometimes this method is employed in order to avoid the use of filters; and there are cases in which it is preferable, as when the solution is so acid or alkaline that it would destroy paper or linen.

DECAPITATION, beheading: a punishment, in all probability, of very antient date, and certainly known among the Greeks and Romans. Xenophon, at the close of the second book of *Cyrus's Expedition*, says, that losing the head was looked upon as the most honourable death. The decollation, as it is called, of St. John Baptist shows the existence of this punishment among the Jews under the Roman government of Judæa. Suetonius (*Calig.* c. 32) tells us that Caligula kept a soldier, an artist in beheading, who decapitated prisoners in his presence, fetched indiscriminately for that purpose from the gaols. Hoveden and Florence of Worcester agree that Earl Waltheof, who was beheaded by William the Conqueror in 1075, was the first Englishman who suffered that punishment.

The Messrs. Lysons speak of beheading as an ordinary punishment, in old time, of felons, in Cheshire. They say, 'An antient MS. relating to the earls of Chester informs us that the serjeants or bailiffs of the earls had power to behead any malefactor or thief who was apprehended in the fact, or against whom guilt was proved by sufficient witness, or confession before four inhabitants of the four neighbouring towns.' Then follows an account of the presenting of several heads of felons at the Castle of Chester by the earl's serjeants; and it appears that the beheading of malefactors was the usual mode of execution in this county; for in a roll of 3 Edward II. it is called the custom of Cheshire. In France criminals capitally convicted are beheaded, not hanged. (Lysons' *Chesh.*, p. 299, from the Harl. MS. 2009, fol. 34, b.)

From another part of their work it appears that criminals convicted of felony were punished in the same manner in the barony of Malpas; and that this power was even exercised by the several possessors of the moiety and fourth parts of that barony. In the 6 Edward II., David Bulkeley, serjeant of the peace to Richard Sutton, presented the heads of two felons executed for burglary, and Hugh Cholmondeley, serjeant of the peace to John de St. Pierre, presented the head of Thomas Burness, executed for theft, and had his fee called the radyng fee. (Ibid., pp. 677, 678, from the Harleian MS. 2079, fol. 124 and 131.) The foresters of Hardwick, in Yorkshire, had this punishment allotted to them for theft.

At a somewhat later period decapitation became a punishment more especially appropriated to the higher orders of society. Henry VIII. beheaded two of his queens. Elizabeth beheaded a sister sovereign. The High Court of Justice beheaded Charles I. In 1644, Archbishop Laud was condemned by the two houses of parliament to suffer death by hanging; and the only favour granted to him upon supplication, after delay and with reluctance, was, that his sentence should be changed to beheading. Losing the head still continues to be considered the most honourable mode of receiving capital punishment in England; but there has been no recent instance of its being inflicted. The last was in the case of the rebel lords of 1745.

DECA'PODA. [Crustacea, vol. viii., p. 197.]

DECCAN (DACSHINA, THE SOUTH) was antiently understood to comprehend the whole of the peninsula of India, situated to the south of the river Nerbudda and the southern boundaries of Bengal and Bahar, and included nearly one-half of the territory generally known under the name of the Mogul empire. The Mohammedan invaders being unable, after several centuries, to fix their possessions south of the Kistna, the name Deccan came to denote the countries lying between the Nerbudda and the Kistna, and the latter river is still understood to form its southern boundary. The Deccan therefore comprehends the following divisions: Candeish, Gundwana, Orissa, Berar, the Northern Circars, Beeder, Aurungabad, Hyderabad, and Bejapore.

The first Mohammedan invasion of the Deccan occurred at the close of the thirteenth century, in the reign of Feroze. Alla, the nephew of that prince, then marched to Deoghur, and exacted heavy contributions as the price of his return. Alla, having succeeded Feroze, again invaded the Deccan in 1304, overran several of the districts, which he divided among his Omrahs, and laid siege to Deoghur, and compelled the rajah to submit, and acknowledge that he held his territory as a dependency. In 1310 Cafoor, one of Alla's generals, was again sent into the Deccan, and penetrated to the Carnatic, which kingdom he ravaged, taking its rajah prisoner, and collecting an immense amount of treasure. Upon the accession of Mohammed the Third, that prince sent a large army into the Deccan, and entirely reduced the Carnatic to his dominion. In a few years thereafter he not only transferred the seat of his government to Deoghur, the name of which he changed to Dowlatabad, but he forcibly removed thither the entire inhabitants of Delhi, leaving the antient capital desolate. Upon the death of Mohammed, which took place amidst rebellions and insurrections in all parts of his dominions, the rebel chiefs agreed to elect a sovereign, and chose an Afghaun named Ismael for king. When this prince had reigned only a few years, he resigned his throne in favour of one of his generals, Hussun, who had originally been an Afghaun slave, and who, on mounting the throne, assumed the title of Sultan Alla ad Dien Hussun Kongoh Bhaminee, and was the founder of the Bhaminee dynasty. During his reign, which lasted eleven years, Alla reduced to his sway all the districts of the Deccan which had at any time acknowledged the sovereignty of the emperors of Delhi, and was the first independent sovereign of the Deccan. His reign was marked by wisdom and moderation: he died in 1357, and was succeeded in turn by twelve sultans of the Bhaminee dynasty, the last of whom, Mohammed Shah Bhaminee, died in confinement in 1518. The Deccan after this was divided into five kingdoms, viz. Bejapore, Golconda, Berar, Ahmednuggur, and Beeder. The sovereigns of these kingdoms were engaged in constant wars with each other. Towards the close of the sixteenth century, the Deccan was invaded by Akbar, and the territory of Ahmednuggur was subdued, and formed into a province of the Mogul empire. In the reign of the Mogul emperor Shah Jehan, his son, the celebrated Aurengzebe, was appointed to command the army on the southern frontier of the empire, and he was not long without a pretext for invading the Deccan, the sovereigns of which he soon reduced to a state of dependence. When he ascended the throne, this prince made war upon these dependent sovereigns, and reduced the whole under his immediate sway: these operations were not completed until the year 1700. In the subsequent reign of Ferokhsere, Nizam al Mulk was sent as viceroy into the Deccan, and soon became its virtual sovereign. The whole country was in fact, from 1717, independent of the Mogul empire, and so continued until the year 1818, when a great part of the Deccan came under the dominion of the English. The Northern Circars were indeed acquired from the Nizam in November, 1766, but it was not until 1818 that the districts known as the British Deccan came immediately into our possession. Candeish was then acquired from Mulbar Rao Holkar; Poona, the Concan, and the Southern Mahratta country was conquered from the Peishwah; and some lands in the Southern Concan were acquired from the rajah of Sawuntwarree. The remaining parts of the Deccan are in possession of the rajah of Berar, the Nizam, and the rajah of Sattara. The territory acquired by the English in 1818 has been divided into four collectorates, viz., Poona, Ahmednuggur, Darwar, and Candeish, the state of which in 1827-8 has been thus given by Colonel Sykes, statistical reporter to the government of Bombay.

Collectorates.	Area.	Number of Houses.	Number of Villages.	Number of Inhabitants.	Number of Cultivators.	Begahs of Cultivated Land.	Amount of Land Revenue.	Total Revenue.
	Sq. Miles.						Rs.	Rs.
Poona	8,281	114,887	1,897	550,313	52,668	1,627,372	15,16,323	19,92,000
Ahmednuggur . . .	9,910	136,273	2,465	666,376	41,948	1,468,180	18,15,837	20,33,995
Darwar	9,122	187,222	2,491	838,757	60,701	2,649,598	19,45,323	24,21,516
Candeish	12,527	120,822	2,682	478,457	44,608	1,056,345	16,64,905	19,87,733
	39,840	559,204	9,535	2,533,903	199,925	6,701,495	69,42,388	84,35,244

The Deccan begah is equal to three-fourths of a statute acre, so that the average assessment on the land is equal to 2*s.* 9¼*d.* per acre, and constitutes more than four-fifths of the total revenue of the collectorates. All lands are comprised within the limits of some village, each of which has a constitution for its internal government, consisting of a patel or chief, assisted by a chaugula, the kulkarni, or village accountant, and other officers called baraballi, the number of the latter depending on the population of the village. A few villages constitute a naikwari, over which an officer presides with the title of naik. Eighty-four villages constitute a pergunnah, or county. Over this number there was formerly placed a desmukh, or governor, assisted by a district accountant and registrar. The lands in this part of India were held under an hereditary tenure; the land-tax is said to have been fixed, but the former governments assumed the power of levying supplementary assessments. Many of the Maharatta families who were in possession of these hereditary estates are extinct, and their lands are now held by a class called upari, a word which signifies strangers, and who are rated each year to the land-tax by mutual agreement between them and the government, the rates being usually the same, or nearly so, as the permanent assessment. A third class hold their lands under leases for five, seven, or nine years, at a rent low at first, and increasing every year till the expiration of the lease. This mode is resorted to in order to encourage men to undertake the cultivation of waste land. Two other tenures, those of Jaghire and Inam, are recognized in the Deccan. Lands so held are free from any government tax. Jaghire is the term applied to lands given for personal or military service, and which must be considered in the light of a fief, implying the obligation on the part of the holder to support the government either by personal service or by maintaining troops. In the four collectorates of the Deccan more than 400 villages have been thus granted by the government. Inám, a word signifying a gift or present, is applied to lands granted usually in small portions in return for some personal service, such as playing music or dancing in the temples: the lands thus given seldom exceed a few begahs in extent. In most villages of the Deccan are to be found some Ramosis, who are thieves by birth, and who have lands given to them in Inam, that they may hold themselves responsible for the safety of property in the district where they reside. Various witnesses who were examined before the Committee of the House of Commons in 1832 concurred in stating that the condition of the cultivators and of the inhabitants generally has been much improved since the Deccan came into the possession of the English government.

DECEMBER. This month still retains the original name assigned to it in the Alban, and first Roman calendar adopted according to tradition by Romulus, in both of which it was the tenth, as the name signifies, or last of the year. Our Saxon ancestors called it Mið-ƿinteꞃ-monað, *mid-winter month*, and ᵹeola or *yule-month*, from ᵹehƿeol, *a wheel*, emblematical of the sun's revolution or return in his annual course.

December was antiently consecrated to Saturn: Alexander ab Alexandro, in his 'Genialium Dierum Libri sex,' says to Vesta, the daughter of Saturn. In the Alban calendar this month consisted of thirty-five days. Romulus reduced it to thirty; and Numa to twenty-nine days. Julius Cæsar restored the day of which Numa had deprived it; and Augustus added another day, which it still retains. Commodus, who attempted to change the names of several of the months, with the assistance of his flatterers, gave that of Amazonius to this, in honour of his mistress, Martia, whom he delighted to see clothed in the Amazonian habit. (Pitisci, *Lexicon*, i. 633, *in voce;* Court de Gebelin, *Allegories Orientales;* Brand's *Popular Antiq.*, vol. i., p. 364; and Brady's *Clavis Calendaria*, i. 92.)

DECE'MVIRI, or Ten Men, the title of various magistrates or functionaries in antient Rome.

1. *Decemviri legibus scribendis*, *i.e.* ten men for the purpose of making a new code of laws, were certain extraordinary magistrates, or rather a commission of ten men, invested with the power both of framing a new code and administering the republic. In the early times of antient Rome the judicial power belonged to the kings, and, after their expulsion, to the consuls, who did not decide according to written laws, but only according to usages and customs. As such usages and customs were necessarily subject to doubt, and as the consuls were chosen only from the patrician order, the disputes between patricians and plebeians were probably often decided partially in favour of the former: and this would happen more especially in criminal cases, for which no certain law was provided. These circumstances led to the institution of the decemvirs.

After many violent struggles, the senate and the plebeians, B.C. 453, agreed that certain written laws should be framed, to which every citizen, without any distinction, should be subject. A commission of three members was appointed to visit Athens for the purpose of getting a copy of Solon's laws and making themselves acquainted with the institutions of other Greek states. (Liv. iii., 31.) The commissioners having returned at the expiration of two years, the tribunes immediately called for the new code. For this purpose another commission, consisting of ten members, was named by the comitia centuriata. Uncontrolled power, both administrative and judicial, without any appeal, and accompanied with the suspension of all other magisterial offices, including the consuls and tribunes, was conferred on them. The names of the ten commissioners are recorded in Livy (iii. 33) and Dionysius Halicarnassus (*Antiq. of Rom.*, xi., 56). Appius Claudius was the leading member of the ten; he was the soul of the commission, and directed all the business. The decemvirs conducted themselves with great moderation and justice. On the expiration of their year of office, they had framed a body of laws, distributed into ten sections, which were approved by the senate and the comitia, and engraved on ten tables of metal.

As the new laws seemed imperfect in some respects, a new commission was named, at the head of which was the same Appius Claudius (Liv. iii., 35). But the decemvirs now began to behave in a very different manner: they became true tyrants, and formed a most pernicious oligarchy. They framed, however, several new laws, which were approved by the centuries and engraved on two tables. Though their commission and the year of their office were now at an end, they still would not resign, but continued to hold their power in the year 447 B.C., and to exercise it in a most arbitrary manner. Appius Claudius, by a most unwarrantable decision, declared Virginia, the daughter of Virginius, an officer in the Roman army, a slave, because she had refused to listen to his dishonourable proposals. Virginius, the father, to save his daughter from violation, murdered her in the public place, and, with the bloody knife in his hand, called on the people to take vengeance on their oppressors. Both the citizens resident in Rome and the army united themselves to overthrow the tyrannical power of the decemvirs, who were forced to abdicate, and the ordinary magistrates were re-established. Appius Claudius was put in prison, where he died.

The ten tables of the former and the two of the latter decemvirs together form the laws of the twelve tables.

2. *Decemviri litibus judicandis*, *i. e.* ten men for the purpose of deciding suits, formed a court of justice under the superintendence of the prætor, which was established about B.C. 287. The establishment of this body was caused by the great increase of suits, which rendered it impossible for the prætor to get through the business of his court. As to the powers of these decemvirs, we have no distinct notices.

3. *Decemviri sacris faciundis*, were an ecclesiastical college, the members of which were elected for life. The care of the Sibylline books belonged to them, and were consulted by them on important occasions.

4. *Decemviri agris dividundis*, were a commission for the temporary purpose of dividing lands among the colonists when a new colony was to be established.

DECHALES, CLAUDE FRANÇOIS MILLIET, was born at Chambery, the capital of Savoy, in 1611. He wrote largely on several branches of mathematical, mechanical, and astronomical science: but the only work by which he is generally known is his edition of Euclid, which was long a favourite text-book in France, and in other parts of the Continent. It was also translated into English; but did not obtain great popularity among our countrymen, whose taste in geometry continued, till recently, to partake strongly of the pure severity of the antient Greek writers.

Dechâles was, however, an accurate and elegant writer on the subjects which he treated: and there are interspersed through his works many marks of considerable invention, as well as of a happy power of adaptation of the knowledge of his predecessors and contemporaries. Still he was not one of those men who had the power greatly to extend the boundaries of science: it was his province rather to place it in such a light as to facilitate its acquisition by others.

He was appointed professor of mathematics in the College of Clermont, the chair of which he appears to have filled for about four years: and thence he removed to Marseilles, where he taught navigation, military engineering, and the applications of mathematics to practical science. From Marseilles he went to Turin, where he was appointed professor of mathematics in the university; and died in that city in 1678, being sixty-seven years of age.

As a teacher, Dechâles was remarkable for his urbanity, and for the adaptation of his instruction to the previous acquirements of his pupils; and as a man, his probity and amiable spirit gained for him the admiration and love of all with whom he was associated.

The works of Dechâles were published at Lyon in 1690, in four folio volumes, under the title of Mundus Mathematicus. A former edition of these was also published in three volumes; but this edition is far less complete than that of 1690.

DECIMAL FRACTIONS. [FRACTIONS, ARITHMETIC.]

DECIMAL NOTATION. [NUMERATION, ARITHMETIC.]

DECIMAL SYSTEM OF WEIGHTS AND MEASURES. [WEIGHTS AND MEASURES.]

DE'CIUS MUS, a Roman who distinguished himself by many warlike exploits, and received many honours. In a battle against the Latins he voluntarily devoted himself to the Dii Manes. He had made an agreement with his colleague, Manlius Torquatus, that the consul whose wing first gave way should devote himself to death. The ceremony of consecration was performed with great solemnity, and having directed the lictors to acquaint the other consul that he had given himself up for the safety of the army, he rode into the thick of the enemy, and was soon overpowered by a shower of darts, about B.C. 338. His son Decius Mus followed his heroic example in a war against the Gauls, B.C. 295, as well as his grandson in the war with Pyrrhus, B.C. 280.

DECIUS CAIUS MESSIUS QUINTUS TRAJANUS, the Roman emperor, succeeded Philip, and chiefly distinguished himself for his violent persecution of the Christians. He and his son fell in an expedition against the Goths, about A.D. 251.

IMP CAES C MESS Q DECIO TRAI AVG
GENIUS EXERC ILLVRICIANI
S C

[Coin of Decius Trajanus.]
British Museum. Actual Size. Copper. Weight 363¼ grains.

DECKER, THOMAS, flourished as a dramatic author in the reign of James I., though the precise time of his birth and death, like those of many of his contemporaries, are uncertain. He is celebrated for a quarrel with Ben Jonson, who satirized him under the name of Crispinus in his 'Poetaster;' Decker returned the compliment by writing his 'Satyromastix,' wherein Jonson is attacked under the name of 'Young Horace.' The author of the 'Biographia Dramatica' says that he became more famous from this quarrel than from any merit of his own. Later critics have, however, been more favourable to Decker, and Mr. Hazlitt pronounced the character of Friscobaldo in the 'Honest Whore' to be perfect in its way, as a picture of a broken-hearted father with a sneer on his lips and a tear-drop in his eye. This comedy is written with great power and with a high moral feeling. Decker composed many plays in union with other dramatists; and the collected works of Webster, Massinger, and Ford exhibit specimens of his partnership-writing, though it is hard to assign the respective portions of productions of this sort to their right authors. Mr. Gifford has attributed all the gross indecencies of Massinger's 'Virgin Martyr' to the hand of Decker; but many have considered this slur on the morality of the latter to be unjust. Of the plays written solely by Decker the 'Honest Whore' is the most celebrated, and is printed in Dodsley's Collection. Besides his dramatic works, his 'Gull's Hornbook' has become better known by an edition recently published.

DECKER, JEREMIAS DE, one of the most esteemed Dutch poets of the seventeenth century, was born at Dordrecht, in 1610, as is generally supposed, but certainly between the years 1608 and 1612. His father Abraham de Decker, who had embraced the reformed religion, was, although of good family, in very moderate circumstances, first as a tradesman, afterwards as public broker. Attached to reading himself, particularly the works of all the best historians, he endeavoured to cultivate a similar taste in his children, and was rewarded by finding his son Jeremias display considerable talents and application at a very early age. Aided merely by such instruction as his father could give him and his own natural aptitude for learning, which was seconded by an excellent memory, young De Decker made so great proficiency that while yet a lad he made himself master of the Latin, Italian, French, and English languages, notwithstanding he was even then obliged to assist his father in his business. At no time of his life in fact can literature be said to have been his occupation, yet that and poetical composition continued to the last the solace of an existence passed in so uniform a tenor as to afford no materials for biography beyond what immediately relates to his writings.

His earliest essays in poetry consisted of paraphrases from Jeremiah, &c., and of translations and imitations from Horace, Prudentius, Buchanan, to which may be added his 'Good Friday,' a collection of pieces breathing the most pure devotional feeling. Indeed a strong vein of unaffected religious sentiment runs through all his compositions, for, as with our own Cowper, religion was with persons instruct a certain number of the pupils in their respective employments. At this institution there is a very complete library of works on the education of the deaf and dumb.

The Glasgow institution, formed in 1819, has had several teachers. Its present master is Mr. Duncan Anderson, whose persevering efforts have raised it to a high degree of prosperity both as to rank and character. It contains sixty pupils. It has no fund more permanent than that derived from payments of pupils, donations, legacies and annual subscriptions. Mr. Anderson has one assistant. The work of the girls is superintended by the matron.

The school for the deaf and dumb at Manchester was opened in 1824. Mr. Vaughan was appointed master; he had been an assistant for several years to Dr. Watson at the London institution. The accommodations of the building were only calculated for 50 children, and in a few years after its establishment many applications for admisssion were annually rejected. A fund has been subscribed for the erection of a commodious building which is now in progress. The death of Mr. Vaughan took place in 1834; his labours and talents have received honourable testimony in that town. The school has been lately committed to the care of Mr. Bingham, a teacher of much experience, at first as an assistant at the Birmingham institution, and afterwards as the master of that at Exeter.

The Liverpool school owes its origin to Mr. William Comer of that town: it was opened in 1825, and commenced as a day-school, but its original plan has undergone some modifications, and its pupils are of the mixed character of boarders, day-boarders, and day-pupils. Several changes have taken place in its mastership; the present teacher is Mr. Rhind, lately an assistant at the London asylum. This school contains 48 pupils.

The West of England institution for the deaf and dumb was established in 1827. It is situated at Exeter. Its especial object is the 'instruction of the deaf and dumb resident in Devon, Cornwall, Dorset, and Somerset.' Like the others it is supported by subscriptions, donations, legacies, and by payments on behalf of the children. Its funds are about equal to the maintenance of fifty children, the number at present in the institution; there are also six pupils who pay liberally for their education. Since the removal of Mr. Bingham to Manchester, the credit of this institution has been amply sustained by his successor, Mr. Gordon. The assistants are one male and one female. The superintendence of the domestic arrangements is confided to a matron.

The Yorkshire institution for the deaf and dumb, situated at Doncaster, is the latest formed in this kingdom. It was commenced in 1829. Throughout its whole course it has been prosperous. Its funds have gradually increased, chiefly in consequence of the exertions of the Rev. W. C. Fenton, its first promoter; it has been enabled to admit every applicant, and for several years a portion of its income has been set aside towards the establishment of a permanent fund. The interest derived from this source at present supplies the annual falling off of subscriptions by deaths and other casualties. Seventy pupils partake of the benefit of the institution, which is under the charge of Mr. C. Baker, and four assistants, two of whom are deaf and dumb. A workmistress has the care of the girls out of school hours, and the domestic arrangements are superintended by a matron.

All these institutions are under the direction of committees chosen from the subscribers residing in or near the towns where they are situated; these committees appoint masters and other officers not chosen at the annual meetings; they establish the general rules of the institutions which they control, but they do not interfere with the course of instruction. One or more examinations of the pupils take place in the course of each year, which the subscribers and the public generally are invited to attend.

In some of these institutions instruction in trades is blended with intellectual instruction; such are those of Dublin and Exeter. In others, industrial occupations are chiefly used as furnishing exercise or a change of employments; of these the institutions of Birmingham and Yorkshire are instances. The schools at Paisley and Belfast are merely day-schools. In most of the institutions there are three classes of pupils; the most numerous are the poor, who are either instructed gratuitously, as at London and Manchester, or who pay a small sum, varying from 2*s.* 6*d* to 3*s.* 6*d.* per week, as at Birmingham, Exeter, and Doncaster. These sums are paid by the parents or friends of the children, or by the parishes to which they belong. In the latter case, it has often been found a difficulty to convince overseers of the policy of educating their indigent deaf and dumb, and thus restoring them to society: but under the operation of the new poor law, section 56 (a clause which was introduced by the Earl of Harewood), the difficulty is in some measure provided for; permission being there given for the advance of sums for the 'deaf and dumb and blind.' The second class of pupils received into our institutions are those whose parents can afford to pay their expenses, so that no burden is in such cases imposed on the funds subscribed for charitable purposes. The payment is generally 20*l.*; this being about the average expense of pupils in the provincial institutions. The third class of pupils are those whose friends can afford to pay a large sum for their education; 80*l.*, 100*l.*, and in some instances more, is the payment required from this class. The number of such pupils being very limited, the masters of institutions are generally allowed this privilege, or a proportion of the income arising from this source is assigned to them.

There are 8000 deaf-mutes in England; the institutions at present in operation are not capable of educating more than 600. It is calculated that at least one-eighth of the whole number are within the age and other qualifications generally prescribed for education. It therefore seems necessary that more extended provisions should be made for their instruction. The densely populated country between the Tees and the Cheviot Hills appears to be an eligible district for the support of a public institution of this kind; and as large towns are in all respects preferable to small ones, offering greater educational advantages and permanent settlements in after-life, the rapidly improving town of Newcastle suggests itself as a proper locality for such an establishment. Another institution should be established in the intelligent and populous city of Norwich, which might include the counties on that portion of our coast. A third desirable point for an institution seems to be Caermarthen, which would take in the whole of Wales, and be conveniently situated for the populous manufacturing counties of Glamorgan and Monmouth. Such is the feeling of interest with which the deaf and dumb are regarded, that it has frequently been only necessary to make known their wants to procure for them that sympathy and aid which their circumstances require.

The adoption of a few simple measures would immediately tend to place the education of the deaf and dumb in this country much higher, and make it more permanent than it has ever been. At present each teacher follows his own plan, for he has no means of learning those of other teachers. The systems are all more or less modified from general principles which have been long known. The matter of instruction and the processes vary in a greater or less extent in different schools, and take their complexion from their respective teachers. The experience of one and the ameliorations introduced into his practice are unknown to all the others. A centre of union is wanted in which the successful expedients of all shall be accumulated. But we do not see how it would be feasible to form such a centre without exciting jealousy and distrust. We have therefore to consider how these institutions might mutually serve each other without endangering that unanimity which it is desirable to preserve among a number of individuals engaged in the same labour of benevolence and charity. The course we would suggest is, that each instructor should draw up an outline, with sufficient detail to make it intelligible, of the branches of study taught in his school; that he should explain generally those processes by which he obtains his results; state the average extent of progress made by pupils in half-yearly or yearly periods throughout the term of education; the portion of school discipline and instruction under his own peculiar charge; and that portion which is confided to the assistants; the arrangements for the management of the pupils when not in school, including physical education and industrial employments. Such outlines would have a direct and immediate tendency to assimilate conflicting systems, and to lead to the adoption of processes which would produce the most satisfactory results. The expense of printing 200 copies of a pamphlet of this nature would be under 5*l.*; it might be transmitted to all institutions, and those left would be sold to visitors, and defray the cost of printing thus incurred. Nearly all the institutions in this kingdom publish a report annually. These reports never hint at methods of teaching, and speak only in very general terms of the results produced, state the difficulties or successes of the preceding year, proclaim the continued good conduct of masters and matrons, sometimes acknowledge their talents and industry, and as a consequence allude to the progress and improvement of the pupils. With such remarks, and a statement of the income, expenditure, list of subscribers, and regulations, the publications we have alluded to are generally filled, and perhaps it is all that is needful to satisfy the public generally and the subscribers in particular. The 'Circulaire' of the Royal Institution of Paris is a very different production. It is designed to accumulate, diffuse, and perpetuate the plans pursued in all institutions in correspondence with it. It is stated in the third circular, that thirty-seven institutions have co-operated with the Paris institution in this labour. Since the commencement of this publication, the institution of New York has published two reports, the sixteenth and seventeenth, which are chiefly devoted to the explanation of the principles and practice followed in that institution; and it is to be hoped that the British institutions will adopt some course by which the intelligence and ability evinced in their management may be more widely diffused. No work exists in the English language worthy of ranking, either in theory or practice, with many in other European languages. In France there are the writings of Sicard, the classic production of Degérando, the practical illustrations of Bébian and Piroux, and the exciting volume of Paulmier. There are besides a host of others, from which much solid satisfaction may be derived. In Germany there are the writings of Wolke, of Daniel, of Venus, of Schwartzer, of Neumann, and many more. We want, in the English language, a full explanation of those principles on which the education of the deaf and dumb rests, and an insight into the philosophy on which such principles are founded. We want also practical lessons, introductory to other school-books, and forming an elementary library or literature for the pupils. No persons are better qualified to write good school-books than those whose practice is founded on a sure theory; the teacher of the deaf and dumb cannot teach words alone; an acquaintance with *things* is essential to his pupils' progress; in this respect his instructions are beyond comparison more valuable than those conveyed to the children in the generality of our schools, and his school-books might be introduced into common education with advantage.

The provision for a succession of teachers of the deaf is in our kingdom very inadequate and insecure. The emoluments of principals in the provincial institutions vary from something more than 150*l.* to 350*l.* a year; the assistants receive from 10*l.* to 50*l.* a year, in addition to board. The principals are generally men of education, of acknowledged ability, and of long experience. With one or two exceptions, the principals of the public institutions for the deaf and dumb in the United Kingdom have been engaged in their present occupation from ten to twenty-five years. When such men from any circumstance quit their profession, it would be natural to suppose that their situations would be easily supplied from the number of assistants educated by them; but the difficulties in which several institutions have been placed show the contrary. The committees of the Dublin, the Birmingham, and the Liverpool institutions have at different times experienced such difficulties. Intelligent assistants will not permanently connect themselves to a profession in which the chances of succeeding to a head-mastership are so few. They therefore take the first opportunity to embark in some occupation which promises more satisfactory hopes of advancement; thus the training they have undergone is thrown away; or, it has been, that such assistants are considered too young to be intrusted with the charge of an establishment where both sexes are committed to their control; for the arrangements of the matron are subordinate to those of the master, and much of her power even with regard to the girls must be derived from him. It seems desirable to devise some plan by which the situations of second-masters shall be rendered permanent, and this can only be done by such an increase to their income as shall bind them to their profession. It cannot be expected that committees of institutions should augment these incomes from their funds; they might thus pay a security for services for a series of years, which would never be directly beneficial to the institutions under their management. A few hundred pounds granted annually from the state would at once remove the difficulty, and enable each second-master to receive from 80*l.* to 100*l.* a year, in addition to his board. Fifty pounds a year granted from the government to the second-master of each institution, to be added to his salary after he has attained the age of twenty-one, and provided he has been engaged as a teacher of the deaf and dumb three years, would remove this difficulty, and furnish an intelligent and experienced class of head-masters, whenever vacancies should occur for such appointments. These persons would also, from the facilities they would acquire in imparting knowledge to the deaf and dumb, become admirable teachers in every branch of primary education. They might take departments in normal schools; they might become superintendents or inspectors of districts of common schools; and when such removals took place, their situations in institutions for the deaf would be filled by the junior teachers. Such assistance as this would not interfere with the established plans of any institution; it would cost the government but little, and very great advantage would be derived from it. In some states the entire cost of educating the indigent deaf and dumb is defrayed by the government; in others a large portion of the expense is thus sustained. It does not therefore seem too much to expect that England should contribute towards providing a supply of teachers for an occupation so useful and so important to the well-being of a large number of the community. The noble decree of the king of Denmark is worthy of imitation: 'Every deaf and dumb child born in this kingdom shall receive the education necessary to render him a useful member of society.' The number of institutions for the deaf in Europe, and some particulars, are given in the table below.

Countries.	Population.	No. of Deaf and Dumb.	No. of Institutions.	Pupils under Instruction.	No. received annually.
Portugal	3,815,000	2 407	1	20	
Spain	11,500,000	7,255	1	30	
France	32,000 000	20,189	28	798	159
Italy	20,000 000	12,618	5	147	29
Switzerland	2,000,000	3,976	5	80	16
Austria	26,444,000	16,684	6	197	39
Prussia	12 726,823	8,293	18	314	62
Other German States	9,905,475	8,283	28	410	81
Hanover	1,500,000	946	1	10	2
Holland and Belgium	6,166,584	2,166	5	249	50
Denmark	1,800,000	1,260	2	190	38
Sweden and Norway	3,800,000	2 397	1	40	8
Russia	44.118.000	27,834	2	111	22
United Kingdom	23,365,807	14,328	12	745	149

With respect to the capabilities of the deaf and dumb for instruction, and the means by which instruction may be imparted to them, the following principles are firmly established:—

1. That the deaf and dumb are naturally equal to other persons in their intellectual faculties and manifestations.

2. That these faculties may be developed by means of articulated language, or by natural and descriptive signs, accompanied by writing.

3. That the less important auxiliaries in the instruction of the deaf and dumb are dactylology, writing, drawing, and the use of pictures.

4. That by these means the mother-tongue can be perfectly taught to the deaf and dumb; and,

5. That during instruction in language by the above auxiliaries they may also acquire the elements of an ordinary education.

The suggestions offered in the course of this article, for improving and extending the education of the deaf and dumb, are as follow. We doubt not but the co-operation of philanthropists, committees, and teachers would, in a very few years, effect all these ameliorations.

1. That the schools at present in operation in this country are insufficient for the instruction of the number of deaf and dumb persons ascertained to be within the usual ages of education.

2. That the time necessary for the common education of a deaf and dumb person, according to the experience of those best informed on the subject, is not less than six years.

3. That the education of the indigent deaf and dumb should be made imperative on the parishes to which they belong.

4. That some means, by the press or otherwise, are neces-

our present editions are copies. The oldest edition is that by J. Wendelstein, Mentz, 1525, under the title 'Canones Apostolorum, veterum conciliorum constitutiones, decreta pontificum. 2. The compilation, which is ascribed to Bishop Isidorus of Seville (633—636), is, for the most part, only a copy of the collection of Dionysius. But it became of importance by the edition made in the 9th century of spurious decretales of the popes, from Clement I. (A.D. 100) to Siricius (A.D. 398), on the authority and the independence of the holy see. The object of these false decretales, called those of the Pseudo-Isidorus, or of Isidorus Mercator or Peccator, was apparently to increase the papal power. This collection was considered as authentic during the middle ages, but no person now maintains its authority. (*Pseudo-Isidorus et Turrianus vapulantes*, by Blondell, Geneva, 1628.) The authentic Isidorus was first edited at Madrid, 2 tom. 1808 and 1821, and the Pseudo-Isidorus is in Merlin's collection, Paris, 1523. 3. Some other collections of Reginus, Prum, Burchardus of Wurms, and Ivo of Chartres. They may be considered as preparatory to the collection of Gratian. [CANON LAW.]

After the time of Gratian many new collections were made. The most important are:—1. The collection of Bernardus Papiensis (A.D. 1213), called Breviarium Extravagantium. It contains partly decretales, which were omitted in the work of Gratian, and partly the decretales of the popes from Alexander III. 2. The collection of Petrus Beneventanus, published by the authority of Pope Innocent III. which contains the decretales of the twelve first years of the reign of that pope. 3. The collection of Joannes Valensis, who collected the decretales of Alexander III., which Bernardus Papiensis had omitted, and those of the popes to Innocent III. 4. As the collection of Petrus Beneventanus contained only the decretales of the first twelve years of the reign of Innocent, a collection of the decretales of the following years of this pope was made by an unknown author. 5. Under the public authority of Pope Honorius III. a new collection, containing the decretales of this pope, was published about the year 1226 by an unknown author.

These five collections, often called the Quinque Compilationes, were edited together under the title 'Antiquæ Collectiones Decretalium, cum Ant. Augustini and Jac. Cujacii notis et emendationibus,' Par. 1609.

The collections after the time of pope Honorius III. form parts of the Corpus Juris Canonici. [CANON LAW.]

(J. H. Bœhmer, *De Decretalium Pontificum Romanorum variis collectionibus et fortuna*, prefixed to the 2nd volume of his edition of the *Corpus Jur. Can.*)

DECREE. [EQUITY.]

DECREMENT. [INCREMENT.]

DECREPITATION is the name given to a series of slight explosions, which occurs when various bodies, especially certain salts, are subjected to heat; and it is generally attributed to the loss of water which they contain mechanically deposited between their particles. The noise which occurs when common salt is heated affords a familiar instance of decrepitation.

DECURIO'NES, a term which denotes certain persons who corresponded to the senate at Rome, in the Roman towns and colonies in Italy which enjoyed free municipal rights. The body of the decuriones was called ordo decurionum, and in later times also curia decurionum, whence the members of the order were also designated by the name curiales. The whole administration of the internal affairs of such towns and colonies was in their hands. They were required to have a certain estate, and to be at least twenty-five years old. It is commonly said that their number was ten, but it was usually greater, and sometimes amounted to 100 members. At the head of the body were the duumviri, *i. e.* two men, like the two consuls, who presided in the Roman senate. Those municipal corporations forming, as to their internal administration, little republics, the citizens had the right of choosing the duumviri just as the citizens of Rome elected their consuls; but under the emperors they were deprived of this privilege, and the decuriones at the same time lost their power. The municipal corporations were administered by officers appointed by the emperor; and the decuriones were only employed to receive the taxes, which subjected them to a great responsibility. The office of a decurion being now considered as a burden, was no longer sought after, and lost its former importance. (Sigonius, *De Antiq. Jur. Ital.* ii. 4.)

DEDICATION. [CONSECRATION.]

DEE, the River, rises in Merionethshire, of which it drains the eastern districts and also the south-eastern part of Denbighshire. It afterwards separates Denbighshire from the detached portion of Flintshire and from Cheshire, but the lower part of its course is entirely within Cheshire. The lake of Bala or Llyn Tegid, which may be considered as the source of this river, receives several mountain-streams, one of which is called Dee [BALA-POOL]. The waters of this mountain-lake are discharged at its north-eastern corner by a stream of considerable size and depth, which is soon increased by other considerable mountain-streams, as the Trevoryn and Alwen. The Dee so far flows in a fine open valley, and its course is not very rapid till it reaches Corwen. Here the river begins to descend from the mountain table-land of North Wales, and in ten miles from Corwen to Trevor it probably falls above 300 feet; its course in this part is consequently extremely rapid, though without cataracts. Below Trevor it enters the plain, in which it runs with numerous windings upwards of thirty-five miles to the tideway at Chester. Here it is joined by the Alyn from the west, and changes its western course into a northern. At Chester the Dee is about 100 yards wide, and runs farther down in an artificial channel along the marshes for about nine miles. The river now enlarges into a spacious æstuary three miles across, which at high water forms a noble arm of the sea; but at ebb-tide it is dry, and resembles an extensive dreary waste, covered with sand and ooze, through which the river runs in a narrow and insignificant stream. It enters the sea near the island of Helbree, where the æstuary is about six miles wide. In its natural state the Dee is wholly unnavigable; but by means of a weir at Chester, the water is dammed up so as to allow the passage of small boats two or three miles above Chester. The whole course of this river from Bala Pool to the beginning of the æstuary may be about seventy miles.

DEE, JOHN, a distinguished astrologer and mathematician, was the son of a wealthy vintner, and born in London in 1527. Lilly says he was a Cambro-Briton, but this is not in accordance with better authorities. At the age of fifteen he was entered of St. John's College, Cambridge, where his attention seems to have been chiefly directed to mathematical, astronomical, and chemical studies, and his assiduity was there, as through life, even to extreme old age, truly remarkable. At twenty he made a twelvemonths' tour on the continent, chiefly in Holland, for the purpose of scientific intercourse; and returning to Cambridge, was made one of the fellows of Trinity Coll, upon its foundation by Henry the Eighth in 1543; and in 1548, the suspicions entertained of his being addicted to 'the black art' induced him again to go abroad, having first taken his degree of A.M. Whether this prejudice really arose from his having already begun the astrological career for which he was in subsequent life so celebrated, or whether it arose simply from his astronomical pursuits and his mechanical inventions, there is no distinct proof. Judging from other circumstances, especially in connection with the vulgar belief, even among the learned, that all exercise of the powers of natural agents in an uncommon manner was only an exercise of the 'powers of darkness,' we should incline to the latter opinion: whilst, judging from his later life, we should be induced to adopt the previous hypothesis in accounting for the annoyances he met with at Cambridge.

His first residence on this second continental visit was the University of Louvain, at that period in high repute as a place of education; and he was much esteemed for his mechanical skill and his intellectual resources, which, combined with his manly character, caused him to be visited by persons of the highest rank. Two years afterwards he went to France, where he read lectures on the Elements of Euclid at Rheims. The character of the 'lectures' on Euclid was in those days extremely different from that of our own time. A series of speculations in all the sciences, whether physical, moral, or mental, was usually given under this title, the propositions of Euclid being taken as so many 'pegs to hang a speech upon.' The more visionary and romantic of these 'lectures' generally contrived to render a course on Euclid a discourse on all the dogmas of the schoolmen of the middle ages, whilst the more reasonable and sober of the lecturers confined their discourses to natural phenomena and the practical applications of geometry. It is almost unnecessary to say that a proof that 'spirits would be in earth and heaven at the same time' (founded on Euc. i. 37), would be more attractive in an academical course than any 'vulgar mechanical' application of the same proposition could be. Of Dee's lectures we may form a tolerably good estimate from his preliminary discourse in Billingsley's English Euclid, and a few other occasional paragraphs of his in that work. It places Dee's acquirements in a very favourable light; and his judgment, considering his time and circumstances, in one still more favourable. The dissertation of Dee is however to be found in works subsequently printed and much more easily obtained; as in Leeke and Serle's Euclid, two or three editions, &c. To read that dissertation is sufficient to convince us that his lectures would be received at Rheims 'with great applause,' as indeed from direct testimony we otherwise know they were.

In 1551 he returned to England, and was presented to King Edward VI by Cecil, and a pension of a hundred crowns was assigned to him. This he however relinquished for the rectory of Upton-on-Severn.

Shortly after the accession of Mary, he was accused of 'practising against the queen's life by *enchantment*;' so that his fame as a dealer in the black art still clung to him. This charge was founded on some correspondence which was discovered between him and the 'servants of the lady Elizabeth;' and it led to a long and tedious imprisonment, with frequent examinations; but as nothing could be established against him, he was ultimately (1555) set at liberty by an order of the council.

On the accession of Elizabeth, Dee was consulted by Lord Dudley respecting 'a propitious day' for the coronation. The queen, to whom he was presented, made him great promises. In 1564 he again visited the continent to present a book which he had written and dedicated to the Emperor Maximilian, under the title of *Monas Hieroglyphica*, and which he printed at Antwerp in that year; and within the year he returned to England.

There is reason however to doubt whether the charge of neglecting Dee, brought against Elizabeth and her ministers, is well made out, however strongly and confidently it has been assumed and repeated. Even this visit to the court of Maximilian might have had an object very different from the ostensible one. There is much probability in Lilly's statement, who says, 'to be serious, he was queen Elizabeth's intelligencer, and had a salary for his maintenance from the secretaries of state. He was a ready-witted man, quick of apprehension, and of great judgment in the Latin and Greek tongues. He was a very great investigator of the more secret hermetical learning, a perfect astronomer, a curious astrologer, a serious geometrician; to speak truth, he was excellent in all kinds of learning.' Lilly's *Memoirs*, p. 224. Where could a man better adapted to the purpose of 'secret intelligence' than such a one be found? This view, too, is borne out by many striking circumstances. Being in 1571 seized with a dangerous illness in Lorraine, the queen sent two physicians to his relief. This is an act the signification of which cannot be doubted.

He afterwards returned to England and settled at Mortlake in Surrey, where he led a life of privacy for some years, devoting himself to study with great ardour, and to the collecting of astronomical and philosophical instruments, not omitting of course a sufficient number of beryls, talismans, &c. His reputation as one who dealt with the devil seems to have strongly manifested itself during this time in his own vicinity, as the mob in 1576 assembled, and destroyed all his collection, or nearly so; and it was with difficulty that he and his family escaped the fury of the rabble.

In 1578, the queen being much indisposed, Mr. Dee was sent abroad to consult with the German physicians and philosophers (or rather astrologers) relative to the means to be employed for her recovery. This was at least the ostensible object; but as no account of the result of this mission exists, except that we know that the queen recovered, we may be led to infer that it was a secret political mission. After his return to England he was employed by the queen to draw up a condensed account of those countries which belonged to her crown, on the ground of being discovered by British subjects, both as to geographical description and the recorded and other evidence upon which her claim rested. With his usual activity he speedily accomplished his task, and in an incredibly short time he presented her majesty with two large rolls in which the discovered countries are geographically described and historically illustrated. These two curious MSS. still exist in the Cottonian Collection in the British Museum. About this time, too, he paid much attention to the reformation of the Calendar, a treatise on which subject by him, and which is considered both 'learned and rational,' is still in manuscript in the Ashmolean Library at Oxford.

Most of the proceedings and writings upon which his fame with posterity as an astrologer rests, were written subsequent to this period, and he was now upwards of fifty years of age. This is not the general period at which men of activity both of mind and occupation sink into dotage; and it is impossible, taking into account several of the succeeding circumstances of the life of Dee, to imagine that this hypothesis can be applied to his case, in explanation of the extravagances which he perpetrated about this time, and soon after. The belief in supernatural agency was general at that period, and the belief in the power of controlling that agency was equally general, we may say universal. That Dee, admitting this in common with all the orthodox whether of the Catholic or reformed religion, was liable to be the dupe of crafty men, older than himself, is evident, and that with a strong and active imagination he should be led to interpret any sensible phenomena in accordance with it, is extremely probable. Whether he intended to be understood literally, or merely to express under those disguises information and memoranda of a very different nature, it is difficult now to determine. We incline to the latter opinion, and we think this view is borne out by circumstances; we shall, however, annex the usual account, which does indeed contain the ostensible view of his later life.

In the year 1581 he took into his service an apothecary of Worcester, named Edward Kelly, as an assistant. The 'conversations with spirits' were held by Dee, in common with this person; and indeed Kelly was in general Dee's amanuensis during the time they were together. They had a black speculum, of what material cannot be ascertained, but it is generally said 'a polished piece of cannel coal,' in which the angels Gabriel and Raphael appeared at their invocation. Hence Butler says

> 'Kelly did all his feats upon
> The devil's looking-glass—a stone.'

The 'Book of Spirits,' is not, however, to be considered a fair sample of Dee's absurdity, if taken literally; and we are not sure that Dee was himself the author of it. It was published in 1659, more than half a century after Dee's death; and hence its authenticity is very questionable; but even admitting its authenticity, we can only infer from it that it was in reality only an envelope of other information which it was not considered safe to commit to writing in an intelligible form, nor to trust entirely to the memory. Possibly, indeed, it might have been a mere cipher, in which special passages that were worked into the general discourse were to be taken in a secretly specified order, so as to express other facts of a political nature. This was a favourite method of cipher at that period.

In 1583, a Polish noble, named Albert Laske, palatine of Siradia, being in England, Dee and Kelly were introduced to him; whether with a political object or not, no direct evidence exists to inform us, but they accompanied him to Poland. It is said that the attachment arose from the similarity of their pursuits, that he soon became weary of them from finding himself abused by their idle pretensions, and that, to get rid of them, he persuaded them to pay a visit to Rodolph, king of Bohemia; that, moreover, though a weak and credulous man, Rodolph was soon disgusted with their nonsense; and that they had no better success with the king of Poland; but that they were soon after invited by a rich Bohemian noble to his castle of Trebona, where they continued for some time in great affluence, owing, as they asserted, to their power of transforming the baser metals into gold.

It was very probably from the circumstance of Laski's being addicted to astrology and alchemy, as well as the king of Poland, that Dee was employed by the queen's crafty ministers as a fitting person for a political mission to that country, in the real character of a 'secret intelligencer.' It was in keeping with the unvarying policy of Elizabeth's government, and with the habits and previous occupation of Dee. The ridiculous pretensions which he and Kelly set up were well calculated to lull all suspicions of their real purpose. No other hypothesis seems capable of affording a key to Dee's conduct during this singular excursion;

and all the circumstances admit of complete explanation by it.

Kelly appears to have been one of those sordid and servile characters that look only at the immediate gain to be made of each single transaction, without having either principle or honour in his composition. Dee, on the contrary, was, as Lilly in his gossiping memoirs tells us, 'the most ambitious man living, and most desirous of fame and renown, and was never so well pleased as when he heard himself styled Most Excellent.' Lilly also gives a curious narrative of the means by which the servant Kelly obtained the art of transmutation from a poor friar, with whom Dee would have no intercourse; and that when the secret was obtained, the friar was made away with; and one reason given by this arch-knave of the Protectorate, Butler's 'Sidrophel,' why 'many weaknesses in the manage of that way of Mosaical learning ('conference with spirits,' in the book ascribed to Dee), was because Kelly was very vicious, unto whom the angels were not obedient, or willingly did declare the questions propounded.'

Dee and Kelly separated in Bohemia, the former returning to England, the latter remaining at Prague. Of the circumstances attending this rupture nothing is certainly known; though the narrative given by Sidrophel is characteristic enough of Kelly's character. See William Lilly's History of his Life and Times from 1602 to 1681, p. 224. Baldwin's Edition.

In 1595 the queen appointed Dee warden of Manchester College, he being then sixty-eight years of age. He resided there nine years; but from some cause not exactly known he left it in 1604, and returned to his house at Mortlake, where he spent the remainder of his days. He died in 1608, aged 81, leaving a numerous family and a great number of works behind him. 'He died,' says Lilly, 'very poor, enforced many times to sell some book or other to buy his dinner with, as Dr. Napier of Linford in Buckinghamshire oft related, who knew him very well.'

Had Dee lived in better times, his great talents, application, and ambition, would have won for him the highest honours; as it was, he was merely the spy of Elizabeth's base ministry, and to effect that purpose obliged to have recourse to stratagems which debase the moral as well as the intellectual character. We have seen his reward too, penury in his old age.

Dee's writings are very numerous, several of which still remain in MS. A catalogue of his printed writings may be seen in his *Compendious Rehearsal*, or his letter to Whitgift; and from these it appears that he then had by him more than forty unpublished writings, the titles of which he gives.

DEED (in law), an instrument in writing or print, upon paper or parchment, comprehending the terms of agreement between parties able to contract, duly sealed and delivered. Deeds are of two kinds, indented and poll: a deed indented is called an indenture, and has a waving line cut (*in modum dentium*) on one of the edges of the material upon which it is written, usually the top edge; and when the deed consists of more sheets than one, on the first sheet only. The term indenture implies that the deed is of two parts, and that they were divided by the line in order to afford additional means of authentication, but, except in the case of leases, marriage settlements, partnership deeds, and some few others, there are seldom more parts than one. In deeds effectuating modern transactions, indeed, the expense of stamps is so heavy, that frequently, where two or more parties are equally interested in a deed, it is deposited with some person for their joint use. Hence the term indenture, in common acceptation, now implies little more than that the deed is made by and between two or more parties. Antiently some word, as for instance 'chirographum' (whence 'chirograph'), was written in capital letters upon the part where the parchment or paper was to be divided, and afterwards cut in an indented or, in some cases, a straight line.

A deed poll is cut even, or polled at the edges, and is usually of one part only, *i.e.* the deed of one party, or of several parties of the same part. The form commences in the mode of a declaration, 'Know all men by these presents, that,' &c.; the form appropriated to an indenture or a deed among several parties is 'This indenture, made, &c between, &c. Witnesseth,' &c. A deed *inter partes* is not necessarily indented, except in those cases where an indenture is required by statute, and except in the working of an estoppel. [ESTOPPEL.] The indenting is not essential, even though the instrument should commence 'This indenture,' &c. It has been said that the indenting may be supplied after the deed is executed, and even in court; but in all cases where the indenting is essential to the validity of the deed, it seems clear that this must be a misake.

A deed, to be absolute and irrevocable, must be founded on a valuable or good consideration, untainted by anything immoral, illegal, or fraudulent, though a gift or voluntary conveyance will be effectual as between the parties, and is only liable to be questioned in certain cases by creditors or subsequent purchasers; and a voluntary deed may become irrevocable by a subsequent sale by the grantee of the subject-matter conveyed by it

Antient deeds were short, and suited to the simplicity of the times. When transactions became more complicated, it was customary to divide deeds into several formal parts; but it is not absolutely necessary that a deed should be so divided, provided there are sufficient words to show the meaning and intention of the parties. These formal parts are, 1. The premises: that is, the date, the parties' names and description, the recitals, the consideration and receipt thereof, the grant, the description of the things granted, and the exception, if any; 2. The habendum, which defines the estate or interest to be granted; 3. The tenendum, which was formerly used to express the tenure by which the estate granted was to be held; but since freehold tenures have been converted into common socage, the tenendum has grown out of use; 4. The reddendum, the reservation of some new thing, as rent, to the grantor; 5. The condition (if any) annexed to the grant; 6. The warranty; 7. The covenants: the office of these two last, in modern conveyances, is served by special covenants for the validity of the title, and to do or abstain from doing certain specified acts; 8. The conclusion, which mentions the execution, &c.

Previous to its execution, the deed should be read, if any of the parties require it; or, as to that party, it may be avoided. The modern mode of executing deeds is by signing, sealing, and delivering. Signing is not essential to the validity of a deed, though it is required as to less formal instruments by the statute of frauds, 29 Ch. II. c. 3; but sealing is absolutely necessary, which is the most antient mode of authentication, and has been in use from the earliest times. At present the seal affords no real security against fraud, for any impression upon wax or other substance employed is sufficient; indeed it is generally affixed by the stationer who engrosses the deed, and it is not even necessary that there should be a seal for each party; one is sufficient for all. In some of the American states the impression upon wax has been disused, and a flourish with the pen at the end of the name, or a circle of ink, or a scroll, is allowed to be a valid substitute for a seal. The last essential to the due execution of a deed is delivery, except in the case of a corporation, where sealing by the common seal has the effect of delivery. The usual manner of delivering a deed is for the executing party to say, 'I deliver this as my act and deed;' but any less formal mode by which the party signifies his intention to deliver it will be effectual. A deed may also be delivered as an escrow, *i.e.* to a third person to keep till something is done by the grantee: when the condition is performed the deed becomes effectual. A deed takes effect from the delivery, and not from the date, and therefore if it have no date, or a date impossible, the delivery ascertains the time from which it is to take effect. Evidence is admissible also of delivery on a day different from the date written. The execution is usually attested. Enrolment and registration are rendered necessary in some cases by statutory enactment, and the revenue laws have imposed certain stamps upon every description of deeds, the absence of which prevents them from being admissible in evidence.

The principal rules for the interpretation of deeds are, that the effect be fair and reasonable, and as near as possible to the apparent intent of the parties as the rules of law will admit: that the construction be made upon the entire deed, and not upon disjointed parts: that where the intention is clear, too minute a stress be not laid on the strict and precise signification of the words, and that if there be two clauses totally repugnant to each other, the first shall be received, and the latter rejected. There are many other rules of construction, which are exactly the same in courts of law and equity. Courts of equity also rectify mistakes in deeds, and give relief in cases of fraud, and where instruments are lost, &c. [EQUITY.]

After execution, a deed may become void by erasure, interlineation, or other alteration in any material part; but, generally speaking, such alterations will be presumed to have been made before the execution, if nothing appear to the contrary, or there be no cause to suspect that it has been done in a clandestine manner. A grantee may also disclaim the grant or disagree thereto; and a deed may be destroyed or cancelled, but such destruction or cancellation will not revest the thing granted in the grantor, though all personal engagements established by the deed between the parties will be put an end to.

A confirmation is an assent to an estate or interest already created, by which act the person assenting confirms and gives validity to the estate or interest so far as he can. A confirmation can only have this effect with respect to estates voidable or defeasible: it has no operation upon estates which are absolutely void. (Butl. n. Co. Litt., 295 *b.*)

(Shep., *Touchstone;* Dixon; Co. Litt.; Cruise's *Digest.*)

DEEMSTERS. [Man, Isle of.]

DEER, CER'VIDÆ, a family of solid-horned ruminants, the horns caducous, and belonging, generally speaking, to the male only.

Horns.

Before we enter upon the other details of the natural history of the species composing this noble natural group, it will be necessary to say a few words on the development of the horns, which form so remarkable a part of the organization of the animals, as weapons of attack and defence, and as being indicative of the presence or the absence of the power of continuing the species, and the more or less vigorous degrees of that power.

In the Museum of the Royal College of Surgeons (*Physiological Series,* No. 179) will be found a section of part of the *os frontis* and of the base of a *fallow deer's* horn (*Cervus Dama*), the growth of which is nearly completed. It shows the horn to be a continuation of bone from the outer table of the skull, and the velvet-like covering of the horn to be equally continuous with the integuments of the head. It shows also the burr or pearl which has been formed round the base of the horn, and illustrates the effects of this part on the growth of the horn.

In the formation of the burr, which is the last part of the process, and takes place rapidly, the osseous tubercles of which it is composed are projected outwards, and by their pressure induce absorption of the vascular external covering, and increasing at the same time laterally, they enclose and compress the blood-vessels; thus, in a short space of time, the circulation is entirely obstructed, and consequently the whole of that once very vascular and sensible tegument loses its vitality, dries, shrinks, and peels off, leaving the horn a naked insensible weapon. In one of the branches (the brow antler) in this preparation, the whole of the vessels appear to have been thus obliterated; in the other a slight degree of vascularity remains, and one of the large external arterial branches is still uncompressed (*Catalogue, Physiol. Series,* vol. i.) The beautiful preparations illustrative of the process are numbered 163 to 187, both inclusive.

The rapidity with which this firm mass of bone is secreted is worthy of note. The budding horns of a male wapiti were several inches high in ten days from their first appearance; a month afterwards there was an interval of two feet between them, measuring from branch to branch.

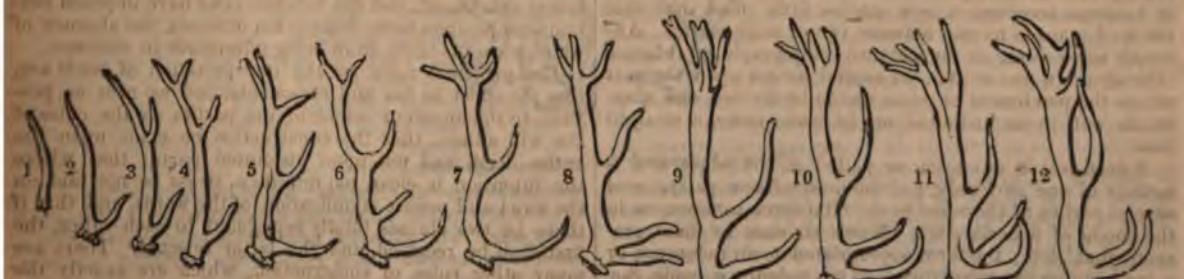
It is in the spring generally that the reproduction of the horn is begun. From the place whence the old horn had been separated and cast, and which at first is apt to bleed, but soon is skinned over with a fine film, the new horn sprouts. At this time there is a strong determination of blood to the head, great in proportion to the demand for such an enormous and ultimately solid secretion. The vessels from the roots swell, the vascular horn pushes up, protected by a delicate and soft covering. In this its early stage it is nearly cylindrical, and the quantity of animal heat which it contains may be in some degree imagined by gently grasping it with the hand. Gradually the antlers appear; the whole 'head,' to use the sporting term, is developed, and becomes of the firmest solidity; the animal feels its powers, and proceeds to rub off the drying and decaying 'velvet,' which may be seen at this period hanging from the horn in ragged strips, against trees and other resisting bodies, leaving at last the magnificent ornament and weapon with only the traces on its now hard surface of the blood-vessels which had produced it. Then it is that the deer, conscious of his strength, comes forth in all his grandeur, ready to do battle with any creature, even man himself, who may dare to invade his haunts. Fierce fights ensue, and the strongest male reigns paramount. The rutting season dies away, spring returns, the antlers are shed, again to be regenerated in time for the season of love.

In the common stag or red deer (*Cervus Elaphus*), the shedding of the horns takes place about the end of February or during March. The fallow deer sheds his horns from about the middle of April to the first weeks of May.

For the production of these annually regenerated bony masses Nature has provided with her usual care. 'We find it a common principle in the animal machine,' says John Hunter, 'that every part increases in some degree according to the action required. Thus we find muscles increase in size when much exercised; vessels become larger in proportion to the necessity of supply, as for instance in the gravid uterus. The external carotids in the stag, also, when his horns are growing, are much larger than at any other time; and I have observed that in inflammation the vessels become larger, more blood passes, and there appear to be more actions taking place; but the nerves do not seem to undergo any change. The nerves of the gravid uterus are the same as when it is in a natural state; neither do the branches of the fifth and seventh pair of nerves in the stag become larger.' (*Hunter on the Blood.*)

But it must not be supposed that the antlers reach their full amplitude in the first years of the male deer's life. In the stag or red deer the horns of the male do not appear till its second year, and the *first* which is shed (fig. 1) is straight and single, like a small thrust-sword or dagger, whence the young male is termed by the French *daguet.* The *next* horn has generally but one antler, as in fig. 2; but it has sometimes two, and even three (figs. 3, 4, which are horns of stags in their third year). The *third* horn has three or four antlers, and sometimes as many as five or six, which are also the numbers of the *fourth* (figs. 5, 6). Up to this time the young male is called a young stag—*jeune cerf.* The *fifth* horn bears five or six antlers of the degree of development indicated in figs. 6, 7, or 8; in this stage the animal is called by the French *cerf de dix cors jeunement.* The sixth horn, which the stag sheds at about seven years of age, is that which bestows upon the stag the appellation of *cerf de dix cors.*

The proportional length, direction, and curvature of the *antlers* vary; and it often happens that there is one more or less on the one side than on the other. Independently of the number of antlers, the horns become larger, the superficial furrows more marked, the burr is more projecting, and the prominences of the frontal sinus which support

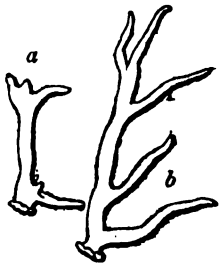


[Horns of Stag, Cervus Elaphus. Left Horns.]

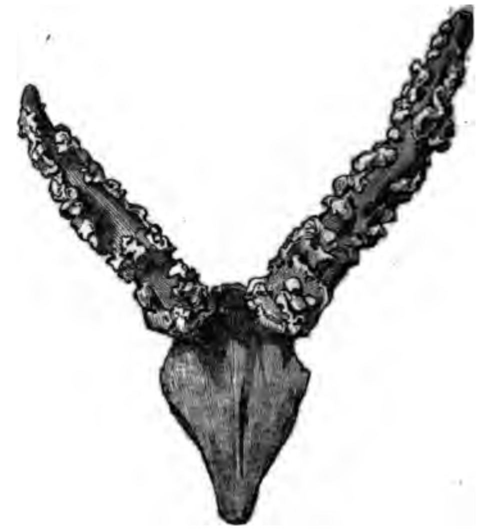
the horns become shorter and wider every year. By such signs is the age of old stags, or those of from eight years upwards, determined; for after the seventh year the number of the antlers is regulated by no fixed rule; they are multiplied towards the summit of the beam, where they are conjoined into a kind of crown or palmation (figs. 9, 10, 11, 12). The oldest heads do not in general present more than ten or twelve antlers (*tines*, Scotticè); but some have been seen that bore the enormous number of thirty-three. Such was the noble *cerf à* 66 *cors* killed by the first king of Prussia, and presented by that monarch to Augustus I., elector of Saxony and king of Poland. This noble head is said to be still preserved at Moritzburg.

In all gradations of age after the appearance of the antlers, the second antler is more or less approximated to the first or brow antler, *maître andouiller* of the French; a name given to it because it is the largest.

The sympathy between that part of the system which regulates the development of the horns in the deer tribe and the organs of generation is most remarkable. For instance, if a stag is castrated when his horns are in a state of perfection, they will, it is affirmed, never be shed; if the operation is performed when the head is bare, the horns, it is said, will never be regenerated; and if it is done when the secretion is actually going on, a stunted, ill-formed permanent horn is the result, more or less developed, according to the period at which the animal is emasculated. Any disturbance of the system generally produces a corresponding deterioration in the horn. In the subjoined cut fig. *a* represents the horn of a deer (*Cervus Canadensis*) produced during a voyage from America, and *b* a horn subsequently developed in the French Menagerie by the same individual, which afterwards produced a head of surprising dimensions.

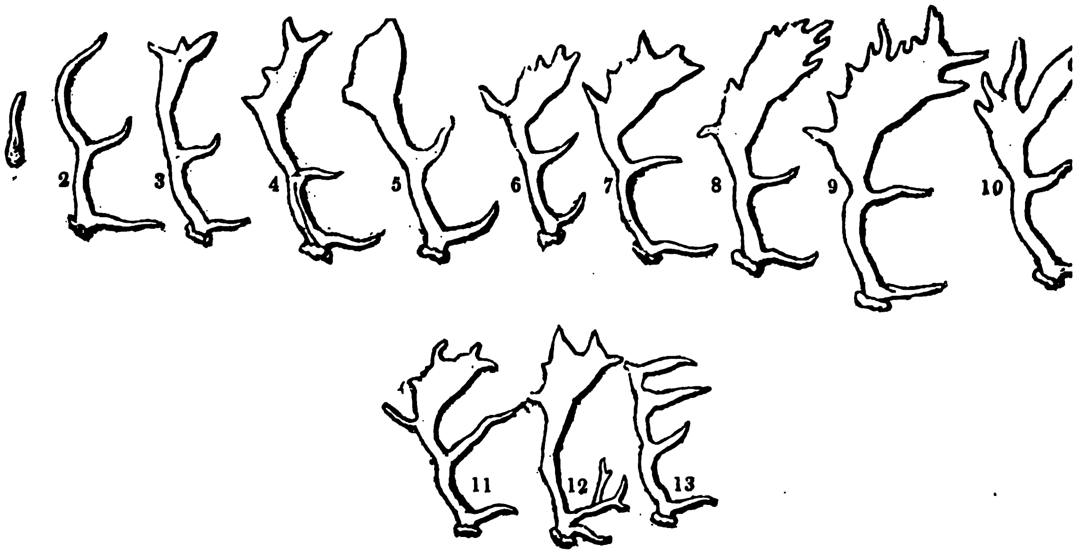


a, Horn of Deer produced under unfavourable circumstances; *b*, horn of same deer produced under more favourable circumstances.



[Horns of a Fallow Deer that were not shed at the usual tim sequence of the castration of the animal. From the Museum of the C Surgeons.]*

The same system of development which we have ol in the *horn with branching antlers* is in great mea be traced in the other leading form of *horn*, viz., *t mated horn*. Taking the horn of the fallow deer (*Dama*) as an example of the latter, we find the ho put forth by the buck at two years old, (when he i a pricket,) a simple shaft, slightly curved, the co turned forwards (fig. 1); this curvature the horns throughout. The second year there are two antlers t forwards (fig. 2), and the summit of the horn in som begins to spread into a palm (figs. 3, 4,) which afterw creases, throwing out a greater or less number of dent on its posterior and superior border (figs. 5, 6, 7, 8). times one or two of these dentelations form true re antlers (figs. 6, 8). Figs. 8 and 9 are horns of the growth, and it will be seen that they begin to be above. In the following years the palm is irregula variously divided (figs. 10, 11, 12, 13), so that the h old bucks are very frequently oddly shaped, and ha be recognized. With still more advanced age they co



[Horns of Fallow Deer, Cervus Dama. Left Horns.]

to dwindle. Cuvier, from whom this account and the figures of the growth of the deer's horn are taken, says that it is asserted that these palmated horns of the buck finish by putting on the simple appearance of the horn first developed (*dague*), and states that he in fact possessed the head of a fallow deer which had only simple horns, and whose teeth were ground down to the very roots by long use.

The reproduction of the horns is annual in the deer of temperate and cold climates; but it has been suppos some of the species inhabiting hot climates do not cas every year. The palmated horn seems to be more esp given to those deer which inhabit the northern lati and Colonel Smith is of opinion that it is a provision to enable the animals to remove the snow from their food.

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* It is apparent from the specimen that these horns could never l they form one bony continuance with the os frontis. . They are evid result of highly disordered functions, and the bony excrescences f beam seem to have the character of exostosis.

Dental formula, generally speaking, the same as in the giraffes, goats, antelopes, sheep, oxen, &c.; viz., incisors, $\frac{0}{8}$; canines, $\frac{0-0}{0-0}$; molars, $\frac{6-6}{6-6}=32$.

Of the molars, both in the upper and lower jaws, six are true and six false. In the upper jaw the three first molars are bordered by a thick crest on their internal surface; the three next have all the characters of the molars in the dromedaries. [CAMEL.] In the lower jaw, the first incisor is the longest, the second and the third rather decrease, and the fourth is very small; all have cutting edges. The two first false molars are simple; the third has a process or heel at its posterior part, and the three others do not differ from those of the upper jaw. In the formula given above, the canines are noted as absent; but this general rule is not without exception, some of the species presenting canines similar to those of the *Musks* (*Moschus*) in the upper jaw. The *Muntjak* has these teeth largely developed. (See, p. 362.)

The Deer-tribe possess the *lachrymal sinus*, or as it is often termed the *suborbital sinus* (*larmiers* of the French, *tear-pits* of the English), even more universally than the Antelopes. Under the title ANTELOPE (vol. i. p. 68), will be found a very good description of them, with the different opinions as to their functions, up to the time when the article was written.

The late lamented Mr. Bennett, at a meeting of the Zoological Society (22nd March, 1836), proceeded to remark that it appeared to him that the lachrymal sinus, the use of which has long remained a problem to zoologists, must be referred to sexual relations. Referring to its structure, as to that of a sac, opening externally by a lengthened slit, but perfectly closed within, he remarked, that that organ could not possibly be in any degree connected with the functions of respiration; there being no aperture through it for the passage of air. Its inner surface is covered by a smooth skin, with a few scattered and very short bristles, and is defended by a dark-coloured and copious secretion of ceruminous matter, which has a heavy urinous and sexual odour. He did not feel himself competent, he stated, to explain the precise manner in which this organ is available for sexual purposes; yet he felt convinced that such is its use, from the consideration of its relative development in the several *Indian Antelopes* of the Society's Menagerie.

In the more aged of these individuals, as indeed in the adult *Indian Antelope* generally, the large cutaneous follicle beneath the eye known as the lachrymal sinus, is so prominent as to form a most striking feature in the animal's physiognomy: it never appears as a simple slit, its thickened edges pointing so widely as to be at all times partially everted. When the animal is excited, and it is constantly highly excitable, the eversion of the bag becomes complete, and its thick lips being thrown widely back, the intervening space is actually forced forwards so as to form a projection instead of a hollow: the animal is, on such occasions, delighted to thrust repeatedly the naked lining of the sac against any substance that is offered to him, which soon becomes loaded with the odour that has been referred to as belonging to the secretion. In the second individual, although it is perfectly mature, the protrusion of the inner surface of the sac is not quite to so great an extent as in the more aged male; and the less thickened edges of the sinus allow of a nearer approximation to its closure in the unexcited state of the animal. The youngest male has the lips of the sinus small and closely applied to each other, so as to hide completely the whole of the internal lining of the sac, and to exhibit, externally, a mere fissure: in it the lips are but slightly moved when the animal is interested. The emasculated individual, notwithstanding its full growth, has its suborbital sinus nearly in the same condition as that of the immature male: it is merely a slight fissure, the edges of which are closely applied to each other; and in it those edges do not appear to be at all moved, the animal being generally careless and inanimate. It would consequently seem that the same cause which induced the retention, by this individual, of its immature colours, and which arrested the perfect growth of its horns, was adequate also for the checking of the development of the suborbital sinuses. Those organs, therefore, would appear to be dependent on sexual perfection; and consequently to be, in some manner yet to be ascertained, subservient to sexual purposes, with the capacity for which they are evidently, in the phases of their development, essentially connected.

Mr. Owen, who had conceived it possible that the secretion of these glands, when rubbed upon projecting bodies, might serve to direct individuals of the same species to each other, remarked that he had endeavoured to test the probability of this supposition by preparing a tabular view of the relations between the habits and habitats of the several species of *Antelopes*, and their suborbital, maxillary, post-auditory, and inguinal glands; in order to be able to compare the presence and degrees of development of these glands with the gregarious and other habits of the *Antelope* tribe. He stated, however, that it was evident from this table, that there is no relation between the gregarious habits of the *Antelopes* which frequent the plains, and the presence of the suborbital and maxillary sinuses; since these, besides being altogether wanting in some of the gregarious species, are present in many of the solitary frequenters of rocky mountainous districts. The supposition, therefore, that the secretion might serve, when left on shrubs or stones, to direct a straggler to the general herd, falls to the ground. (*Zool. Proc.* 1836.)

The reader will find the table above alluded to in the Proceedings of the Zoological Society of London, for 1836.

The osteological structure of the Deer-tribe is such as would be expected when it was necessary that the bony framework should exhibit a union of lightness and strength, necessary for an animal whose life is to depend on its agility and defensive powers. The general character of the skeleton may be collected from the different skulls figured in this article and from the FOSSIL ELK. (p. 364.)

Geographical Distribution.—The form is widely spread, and seems capable of being so modified as to withstand the extremes of heat and cold.

The species are very numerous, and our limits will only permit us to give a few examples of the various sections.

Character of the Family.—*Horns* caducous or deciduous, proper to the male only, generally. *Body* plump. *Legs* slender. *Lachrymal sinuses* under the eyes. A *muzzle* in the greater part of the species. *Ears* moderate, pointed. *Tail* very short. *Mammæ* four, inguinal. (Dental formula given above.)

a.

Horns sessile, more or less subdivided, without either basilary or mesial antlers, but terminated by a vast palmation, digitated on its external border only.

THE ELKS.

Example, *Alces Americanus*, *Cervus Alces*, Linn. *The Elk* or *Moose Deer*.

This noble animal is, according to Dr. Richardson, the *Ellan*, *Stagg*, or *Aptaptou* of De Mont; *Eslan ou Original* of Sagard-Theodat; *Original* of La Hontan, Charlevoix, Denys, Du Pratz, and of the French Canadians of the present day; *Orignac* (Hist. de l'Amerique), and of the Basque settlers in Canada (De Mont); *Moose Deer* of Dudley, Pennant, and Warden; *Moose* of Umfreville and Heriot; *Mongsoa* of the Algonquins; *Mousöa* of the Crees; and *Denyai* of the Chipewyans.

Description.—'This animal is the largest of the genus, being higher at the shoulders than the horse; its horns weigh sometimes near fifty pounds: accordingly, to bear this heavy weight, its neck is short and strong, taking away much of the elegance of proportion so generally predominant in the deer; but when it is asserted that the elk wants beauty or majesty, the opinion can be entertained by those who have seen the female only, the young, or the mere stuffed specimens; for us who have had the opportunity of viewing the animal in all the glory of its full-grown horns, amid the scenery of his own wilderness, no animal could appear more majestic or more imposing. It is however the aggregate of his appearance which produces this effect; for when the proportions of its structure are considered in detail, they certainly will seem destitute of the harmony of parts which in the imagination produces the feeling of beauty. The head measuring above two feet in length, is narrow and clumsily shaped, by the swelling upon the upper part of the nose and nostrils; the eye is proportionably small, and sunk; the ears long, hairy, and asinine; the neck and withers are surmounted by a heavy mane; and the throat furnished with long coarse hair, and, in younger specimens, encumbered with a pendulous gland: these give altogether an uncouth character to this part of the animal. Its body, however, is round, compact, and short; the tail not more than four inches long; and the legs, though very long, are remarkably clean and firm; this length of limbs and the overhanging lips have caused the antients to fancy that it grazed walking backwards. The hair of the animal is coarse and angular, breaking if bent. Its movements are rather heavy, and the shoulders being higher than the croup, it does not gallop, but shuffles or ambles along, its joints cracking at every step, with a sound heard to some distance. Increasing its speed, the hind-feet straddle to avoid treading on its fore-heels, tossing the head and shoulders like a horse about to break from a trot to a gallop. It does not leap, but steps without effort over a fallen tree, a gate, or a split fence. During its progress, it holds the nose up, so as to lay the horns horizontally back. This attitude prevents its seeing the ground distinctly; and as the weight is carried very high upon the elevated legs, it is said sometimes to trip by treading on its fore-heels, or otherwise, and occasionally to give itself a heavy fall. It is probably owing to this occurrence that the elk was believed by the antients to have frequent attacks of epilepsy, and to be obliged to smell its hoof before it could recover; hence the Teutonic name of *Elend* (miserable), and the reputation, especially of the fore-hoofs, as a specific against the disease.' (Smith.)

In 'A perfect Description of Virginia,' (small 4to, 1649,) we find it thus written: 'The elkes are as great as oxen, their horns six foot wide, and have two calves at a time.' Hearne remarks that the horns of the moose occasionally exceed 60 lbs., and that their texture is harder than that of any other deer-horns to be found in the fur countries. Lawson ('Nat. Hist. of Carolina') says, 'The elk is a monster of the venison sort. His skin is used almost in the same nature as the buffelo's (bison's). Some take him for the red deer of America, but he is not; for if brought and kept in company with one of that sort, he will never couple.* * * His horns exceed (in weight) all creatures which the New World affords.' Dr. Richardson states that he has been informed that the males sometimes attain a weight of eleven or twelve hundred pounds.

Utility to Man.—'The flesh of the moose is very good, though the grain is but coarse, and it is much tougher than any other kind of venison. The nose is most excellent, as is also the tongue, though by no means so fat and delicate as that of the common deer (rein-deer). The fat of the intestines is hard like suet; but all the external fat is soft like that of a breast of mutton, and, when put into a bladder, is as fine as marrow. In this they differ from all the other species of deer, of which the external fat is as hard as that of the kidnies.' (Hearne.) In the 'Perfect Description of Virginia' above quoted, it is stated that the 'skins make good buffe, and the flesh as good as beefe.' Lawson, though he speaks of the good qualities of the skin, does not seem to have so high an opinion of the flesh. 'His flesh,' says Lawson, 'is not so sweet as the lesser deers.' Dr. Richardson remarks that the flesh of the moose is more relished by the Indians and residents in the fur countries than that of any other animal, and principally, he believes, on account of the soft fat. In his opinion, corroborating the old book above quoted, the flesh bears a greater resemblance in its flavour to beef than to venison.

The same author describes the dung of the animal as being in the form of brown oval pellets, and such were the droppings from the individuals kept at the garden of the Zoological Society in the Regent's Park. The skins, Dr. Richardson observes, when properly dressed, make a soft, thick, pliable leather, excellently adapted for mocasins, or other articles of winter clothing. The Dog-ribs, he adds, excel in the art of dressing the skins, which is done in the following manner. They are first scraped to an equal thickness throughout, and the hair taken off by a scraper, made of the shin-bone of a deer, split longitudinally; they are then repeatedly moistened and rubbed, after being smeared with the brains of the animal, until they acquire a soft spongy feel; and lastly, they are suspended over a fire made of rotten-wood, until they are well impregnated with the smoke. This last-mentioned process imparts a peculiar odour to the leather, and has the effect of preventing it from becoming so hard, after being wet, as it would otherwise do. (*Fauna Boreali-Americana.*)

Locality.—'Du Pratz,' writes Dr. Richardson, 'informs us that, in his time, moose-deer were found as far south as the Ohio: and Denys says that they were once plentiful on the Island of Cape Breton, though at the time he wrote they had been extirpated. At present, according to Dr. Godman, they are not known in the state of Maine, but they exist in considerable numbers in the neighbourhood of the Bay of Fundy. They frequent the woody tracks in the fur countries to their most northern limit. Several were seen on Captain Franklin's last expedition at the mouth of the Mackenzie, feeding on the willows, which, owing to the rich alluvial deposits on that great river, extend to the shores of the Arctic Sea, in lat. 69°. Farther to the eastward, towards the Copper Mine river, they are not found in a higher latitude than 65°, on account of the scarcity on the Barren Grounds of the aspen and willow, which constitute their food. I have not been able to ascertain whether they occupy the whole width of the continent or not. Mackenzie saw them high up on the eastern declivity of the rocky mountains, near the sources of the Elk river; but I suspect that they are rarely, if ever, found to the westward of the mountains. Authors mention that the moose generally form small herds in Canada. La Hontan, who travelled in that country in 1683, says, that whilst he accompanied the Indians, they hunted the Elk with dogs when there was a crust on the snow; and that after a chase of a few leagues they generally found ten, fifteen, or twenty of them in a body: in three months his party killed fifty-six, and might have taken as many more. It is probable, however, that La Hontan in this passage confounds the Canada-stag and moose-deer together. He mentions the animal being able to run, in the summer season, for three days and nights in succession, and the excellent flavour of its flesh,—facts which apply to the moose-deer, but not to the Canada-stag; on the other hand, the weight of the horns, which he says sometimes amounts to four hundred weight, is true only of the stag. In like manner the accounts of the other antient writers on Canada are liable to suspicion.'

Habits, Chase, &c.—Lawson observes of the elks that 'they will often resort and feed with the buffelo, delighting in the same range as they do.' Dr. Richardson gives the following succinct account of their habits and food, and of the mode of hunting them.

'In the more northern parts the moose-deer is quite a solitary animal, more than one being very seldom seen at a time, unless during the rutting season, or when the female is accompanied by her fawns. It has the sense of hearing in very great perfection, and is the most shy and wary of all the deer species, and on this account the art of moose-hunting is looked upon as the greatest of an Indian's acquirements, particularly by the Crees, who take to themselves the credit of being able to instruct the hunters of every other tribe. The skill of a moose-hunter is most tried in the early part of the winter; for during the summer the moose, as well as other animals, are so much tormented by musquitoes, that they become regardless of the approach of man. In the winter the hunter tracks the moose by its foot-marks in the snow, and it is necessary that he should keep constantly to leeward of the chase, and make his advances with the utmost caution, for the rustling of a withered leaf or the cracking of a rotten twig is sufficient to alarm the watchful beast. The difficulty of approach is increased by a habit which the moose-deer has of making daily a sharp turn in its route, and choosing a place of repose so near some part of its path that it can hear the least noise made by one that attempts to track it. To avoid this, the judicious hunter, instead of walking in the animal's footsteps, forms his judgment from the appearance of the country, of the direction it is likely to have taken, and makes a circuit to leeward until he again finds the track. This manœuvre is repeated until he discovers, by the softness of the snow in the foot-marks and other signs, that he is very near the chase. He then disencumbers himself of everything that might embarrass his motions, and makes his approach in the most cautious manner. If he gets close to the animal's lair without being seen, it is usual for him to break a small twig, which alarming the moose, it instantly starts up; but, not fully aware of the danger, squats on its hams, and voids its urine, preparatory to setting off. In this posture it presents the fairest mark, and the hunter's shot seldom fails to take effect in a mortal part. In the rutting season the bucks lay aside their timidity, and attack every animal that comes in their way, and even conquer their fear of man himself. The hunters then bring them within gun-shot by scraping on the blade-bone of a deer and by whistling, which, deceiving the male, he blindly hastens to the spot to assail his supposed rival. If the hunter fails in giving it a mortal wound as it approaches, he shelters himself from its fury behind a tree, and I have heard of several instances in which the enraged animal has completely stripped the bark from the trunk of a large tree by striking with its fore feet. In the spring-time, when the snow is very deep, the hunters frequently run down the moose on snow-shoes. An instance is recorded in the narrative of Captain Franklin's second journey, where three hunters pursued a moose-deer for four successive days, until the footsteps of the chase were marked with blood, although they had not yet got a view of it. At this period of the pursuit the principal hunter had the misfortune to sprain his ankle, and the two others were tired out; but one of them, having rested for twelve hours, set out again, and succeeded in killing the animal after a further pursuit of two days' continuance. Notwithstanding the lengthened chase which the moose can sustain when pursued in the snow, Hearne remarks that it is both tender-footed and short-winded; and that, were it found in a country free from underwood, and dry under foot, it would become an easy prey to horsemen and dogs. The same author informs us that in the summer moose-deer are often killed in the water by the Indians who have the fortune to surprise them while they are crossing rivers or lakes, and that at such times they are the most inoffensive of animals, never making any resistance.

'The young ones in particular,' says he, 'are so simple, that I remember to have seen an Indian paddle his canoe up to one of them, and take it by the poll, without experiencing the least opposition, the poor harmless animal seeming at the same time as contented alongside the canoe as if swimming by the side of its dam, and looking up in our faces with the same fearless innocence that a house-lamb would, making use of its fore foot almost every instant to clear its eyes of mosquitoes, which at that time were remarkably numerous. The moose is the easiest to tame and domesticate of any of the deer kind.'

With respect to the food of the moose, the same traveller says, 'Their legs are so long, and their necks so short, that they cannot graze on the level ground like other animals, but are obliged to browse on the tops of large plants and the leaves of trees in the summer, and in winter they always feed on the tops of willows and the small branches of the birch-tree, on which account they are never found during that season but in such places as can afford them a plentiful supply of their favourite food; and although they have no fore-teeth in the upper jaw, yet I have often seen willows and small birch-trees cropped by them in the same manner as if they had been cut by a gardener's shears, though some of them were not smaller than a common pipe-stem; they seem particularly partial to red willows' (*cornus alba*). To the eastward of the Rocky Mountains the evergreen leaves of the *gualtheria shallon* form, according to Lewis and Clark, a favourite part of the food of the moose-deer.

The wooden pipe-stems above alluded to and used in Hudson's Bay, are, says Dr. Richardson, about the thickness of a little finger.

It is generally held by zoologists that the American elk and the European or Scandinavian elk are specifically the same. It was the opinion of Buffon that the European elk was not known to the Greeks, nor does it appear to have been noticed by Aristotle. That it was the Ἄλκη (Alce) of Pausanias, Alce of Cæsar and Pliny, Elch of the Celts, and Elg or Elg of the northern Europeans, there can be little doubt. Pausanias describes it (ix. 21) as being *ἐλάφου καὶ καμήλου μεταξύ*, 'between a stag and a camel;' and though the accounts of Cæsar and Pliny are mingled with fable, and the former states that his *Alces* are *mutilæ cornibus* (which might arise from the accounts of those who had seen the animal at the period when the horns had exfoliated), the general description and the localities given by both are almost conclusive as to the animal meant to be designated. The 'labrum superius prægrande,' 'huge upper lip,' of Pliny, is very expressive, and the extraordinary development of this part might well recall to a casual observer the general traits of the head of a camel. Whether it was the ἱππέλαφος (hippelaphus) of Aristotle is a question which will admit of much discussion. The hippelaphus is described by Aristotle (*Hist.*, lib. ii. c. 1) as having a mane near the springing of the shoulder, but the upper part of the neck from that point to the head without that ornament, a beard under the front of the neck, and the head armed with horns approaching to those of the roe (δορκάς). Scaliger confesses that he knows not what this animal is; Caius, as quoted by Gesner, considered it to be the elk, and Gesner himself leans to this opinion, which is adopted by Klein and many others. Buffon relies upon two reasons for not confounding the elk with the hippelaphus; one is the size of the two animals, the other the climates which they inhabit. Aristotle makes the size of the hippelaphus nearly that of a stag, which is inferior in bulk to the elk, and he assigns as its locality, Arachosia, a country of Asia about the 83° of longitude, and the 33° of latitude, according to D'Anville's map; whereas the elk never quits the cold countries of the north. Upon the whole, Buffon thinks that the hippelaphus is no other than the stag of Ardennes (a variety of the common stag, *Cervus Elaphus*), which, he observes, is larger than the common stag, and differs from it only in the skin, which is of a deeper colour, being nearly black, but also in the long hair which it carries on the shoulders and under the neck. M. Camus considers that the difference of climate and locality, amounting to more than 15° of latitude and 50° of longitude, operates strongly against the identity of the stag of Ardennes with the hippelaphus. There can be but small doubt that the hippelaphus of Aristotle is not the elk, but some one of the Asiatic species. M. Frederick Cuvier is of opinion that the Rusa deer is the species meant. The probability is, that though the European elk will not turn out to be specifically different from the American, it will prove to be a variety when the two animals are carefully compared with each other, which does not as yet appear to have been done. La Hontan hints at differences between them, and Colonel Smith remarks that the lower parts of the antlers of the American elk are more often separated into branches than those of the European.

[Alces Americanus.]

Mr. Lloyd (*Field Sports of the North of Europe*, vol. ii.) observes that the elk was at one time numerous in most parts of Sweden and Norway; but owing to the increased population, and other causes, it is now only to be met with in particular districts. In Scania, he adds, the most southern province of Sweden, where elks once abounded, none are now to be found.

M. Nilsson states that the elk cannot endure so cold a climate as the stag, the 64° of latitude being the extreme limit at which it is met with in the Scandinavian peninsula.

Mr. Lloyd says that it is reported that the elk not unfrequently attains to the height of seven or eight feet. 'This,' he continues, 'I can readily believe, as Mr. Wise, the Swedish consul-general, had one in his possession a few years ago, which, though only two years of age, measured nearly nineteen hands, or upwards of six feet at the shoulder. I once took the exact dimensions of a rather large male elk that I shot, but unfortunately I lost the string with which I effected that purpose out of my pocket. Though this animal was not fully grown, it was thought he weighed near one thousand pounds.' The same author states the period of gestation to be about nine months, and that the female brings forth, about the middle of May, from one to three young ones; but it is seldom that she has more than two. At this period the mother retires alone to the wildest recesses of the forest. After a lapse of two or three days, the fawns, which are of a light brown colour, have sufficient strength to follow their dam everywhere; they keep with her until they are in their third year, when she leaves them to shift for themselves.

Mr. Lloyd thus describes the habits and uses of the European elk. 'The elk is a long-lived animal; he does not attain to his full growth until after his fourteenth year. At least so it is to be presumed, as up to that period his horns, which are of a flat form, are annually provided with an additional branch. He sheds his horns about the month of February in each year. The female elk, unlike the rein-deer of that sex, has no horns. The horns of the young male elk are perceptible nine months after its birth: for the first year they are cylindrical and short; the second year they are about a foot in length, but not branched; the third year, two points are discernible; the fourth year, three; the fifth, they are full grown in length. From that time forward they yearly increase in breadth, and in the number of branches until there are as many as fourteen on each horn.

'By nature the elk is timorous, and he usually flies at the sight of man. In the rutting season, however, like other animals of the deer kind, he is at times rather dangerous. His weapons are his horns and hoofs; he strikes so forcibly with the latter as to annihilate a wolf, or other large animal, at a single blow. It is said that when the elk is incensed, the hair on his neck bristles up like the mane of a lion, which gives him a wild and frightful appearance.

'The usual pace of the elk is a high shambling trot, and his strides are immense, but I have known him, when frightened, to go at a tremendous gallop. In passing through thick woods he carries his horns horizontally, to prevent them from being entangled in the branches; from the formation of his hoofs he makes a great clattering, like the rein-deer when in rapid motion. In the summer season the elk usually resorts to morasses and low situations; for, like other animals of the deer kind, he frequently takes to the water in warm weather; he is an admirable swimmer. In the winter time he retires to the more sheltered parts of the forest, where willow, ash, &c., are to be found; as, from the small boughs of these trees he obtains his sustenance during that period of the year. In the summer and autumn the elk is often to be met with in small herds, but in the winter there are seldom more than two or three in company. At the latter season, indeed, he is frequently alone.

'The flesh of the elk, whether fresh or smoked, is very excellent: the young are particularly delicious. According to Mr. Nilsson, it resembles in taste that of the stag. The tongue and the nose are thought to be great delicacies in Scandinavia as well as in America. Great virtue was once placed in the hoof of that animal, as parings of it were supposed to be a specific against the falling sickness and other disorders; but this idle notion must, by this time, I should think, be nearly exploded. The skin is convertible to many purposes, and is very valuable. Mr. Greiff says—"It is not long since that a regiment was clothed with waistcoats made from the hides of those animals, which were so thick that a ball could scarcely penetrate them." He adds farther, that "when made into breeches, a pair of them, among the peasantry of former days, went as a legacy for several generations."

'The elk is easily domesticated: several instances have come to my knowledge. I had a fawn in my own possession a year ago, but from want of proper nurture, it died. Formerly these animals were made use of in Sweden to draw sledges, but, owing, as it was said, to their speed frequently accelerating the escape of people who had been guilty of murders, or other crimes, the use of them was prohibited under great penalties. Though I apprehend those ordinances, if not abrogated, are obsolete, I am not aware that the elk is ever made use of in that kingdom at the present day, either to draw a sledge, or for other domestic purposes.

'In Sweden, as I have observed, it is contrary to law at this particular time, to kill the elk at any season of the year: this is not the case in Norway; for in that country, as I have just shown, these animals may be destroyed, with certain limitations as to numbers, from the 1st of July to the 1st of November inclusive. The penalty however for killing an elk out of season, in Norway, is very much heavier than in Sweden; it amounts indeed, including legal expenses, &c., to about 20*l.*, which is no inconsiderable sum in that kingdom.' (Lloyd, *Northern Field Sports*, vol. ii., p. 329 et seq.)

Immediately following the passage above quoted there is a very interesting account of the mode of hunting the elk, in Scandinavia, upon 'skidor,' or snow skates, interspersed, as most of such narratives are, with notices of the habits of the animal; but as our limits will not permit its insertion, we refer the reader to the work, which is well worthy of his attention.

Sir William Jardine, in 'The Naturalist's Library,' vol. iii. (Ruminantia), speaking of the American elk, says, 'This is the only animal which will rank with the subgenus *Alces*, though to another animal, known only by the horns, the name of *coronatus* has been applied by Cuvier. They are in the Paris Museum, bear sixteen snags, but are scarcely a foot in length: they stand about three inches asunder, and more on the forehead than in the common elk; and Mr. Smith thinks they must have been borne by an animal not larger than the fallow deer, and states his opinion that it may prove to be the *Kistuke*, or little elk, of the Rocky Mountain Indians.'

β.

Horns sessile, more or less divided, provided with basilary and median antlers.

*

Antlers flattened.

The Rein-deer.

Description.—The tame rhendeer, or reindeer, of the Laplanders, is, according to Hoffberg (*Amœn. Acad.*, vol. iv.), at the end of his back, an ell and a half high, and his length, from horns to tail, is two ells, whilst from the navel to the back-bone he measures three-quarters of an ell. On casting his coat, his hair is at first brownish-yellow, but as the dog-days approach it becomes whiter, till it is at last almost entirely white. Round the eye the colour is always black. The longest hair is under the neck; the mouth, tail, and parts near the latter are white, and the feet, at the insertion of the hoof, are surrounded with a white ring. The hair of the body is so thick that the skin cannot be seen when it is put aside, for it stands erect as in other animals of the same genus, but is much thicker. When the hair is cast it does not come away with the root, but breaks at the base.

The *horns* are cylindrical, with a short branch behind, compressed at the top and palmated with many segments, beginning to curve back in the middle, and an ell and a quarter long. A single branch, sometimes but seldom two, springs from each horn in front, very near the base, frequently equalling the length of the head, compressed at the top and branched. The distance between the tips equals the length.

The *horns* of the *female* are like those of the male, but less, more slender, and not so much branched: she has four true paps and two false ones.

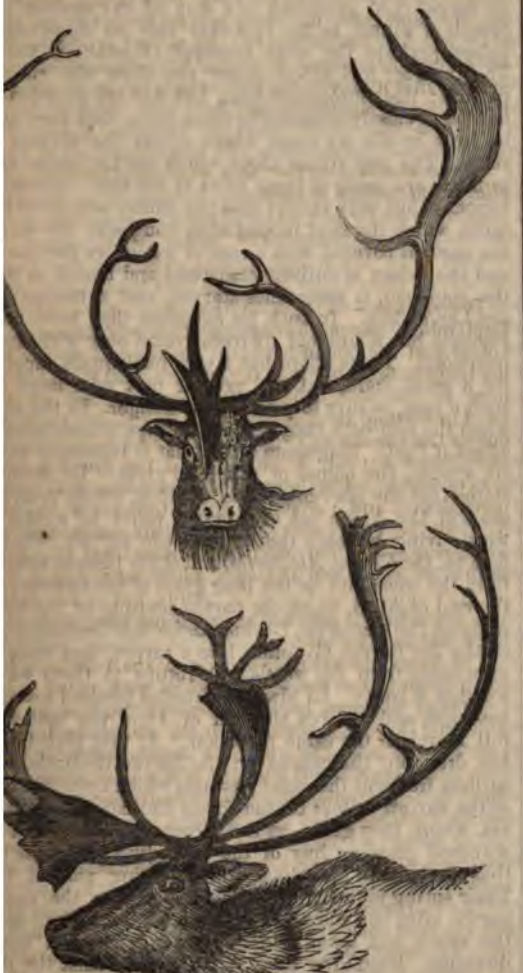
The horns grow in the usual manner, and during the early part of their growth are extremely sensible, and suffer from the clouds of gnats (*Culex pipiens*) that form one of the persecutions of both deer and owner. About autumn, before rutting-time, they are become hard, and the velvet is rubbed off. Towards the end of November the male loses his horns, but the female retains hers till she brings forth; if barren, she drops them in the beginning of November.

When castrated, the rein-deer seldom sheds his horns till the new year; the strongest shed them soonest, and the longer they keep them the worse they are. If Hoffberg is correct, Scheffer and Hulden, whose assertion he notices, are in error when they state that the castrated reindeer never loses his horns; and as the female, as well as the male, is furnished with them, this species may differ in that respect from others where the possession of those weapons is confined to the male.

The nostrils are oblique and oblong; their hoofs are large in proportion, and the cleft is hollowed internally, so that rts may touch accurately at the dividing line at the ; the tail is about a quarter of an ell, hardly so much. wild rein-deer grows to a much larger size than those are tamed.*

ust be remembered by zoologists, that the horns of nt individuals vary so much, that it has been asserted o two, even of the same age and sex, have those ns shaped exactly alike. Cuvier in his 'Ossemens s' has figured a series of the almost endless modifi- of these horns from specimens in the Paris Mu- and the conclusion to which he came from these , that there is no character common to the whole , but that of having the horns smooth and com- d in every part, except in the short portion imme- connected with the burr: that great zoologist has urnished the information that enables us to strike veral so-called species founded on this variety in the pment of the rein-deer's horn.

rein-deer is also subject to great variety of colour, larly in a domesticated state, as is the case with ther animals; and spotted or mottled individuals are means uncommon in Lapland, and are of still more nt occurrence in Siberia.



ds of two old buck Caribou of the Barren Grounds. From Dr. Richard- ats taken from Captain Back's drawings.]

as been a question with some whether the *Lapland deer*, and *The Caribou*, or *Rein-deer of America*, and rieties, are distinct species. Colonel Smith remarks, probable distinction, by which some, if not all, the ies of *Caribou* may be distinguished from the rein- of the Old Continent is, that their horns are always er, less concave, more robust, the palm narrower, and fewer processes than those of the former. This is an- instance of the danger of relying on the form of the horns in this sub-genus as a distinguishing character. 'I have had but little opportunity,' says Dr. Richardson, in his Fauna Boreali-Americana, 'of ascertaining how far these remarks apply to the woodland variety of Caribou; but I can with confidence say, after having seen many thousands of the Barren Ground kind, that the horns of the old males are as much, if not more palmated than any antlers of the European rein-deer to be found in the British museums.' The annexed cuts were made from drawings by Captain Back, of the antlers of two old buck Caribou, killed on the Barren Grounds, in the neighbourhood of Fort Enterprise. It is to be recollected, however, that the antlers of the rein-deer assume an almost infinite number of forms, no two individuals having them alike.

It is, then, the general opinion among zoologists, that the American, European, and Asiatic races of rein-deer, are varieties of one species, of which the following appear to be the

Synonyms.—Rangifer, *Reinthier*, and *Tharandthier*, of Gesner and others; *Tarandus*, of Aldrovandus and others; *Cervus mirabilis*, *Cervus palmatus*, *Rangifer*, *Reinthier*, *Tarandus*, *Tarandhthier*, of Jonston; *Caribou, ou Asne Sauvage*, of Sagard-Theodat, La Hontan and Charlevoix; *Carré-bœuf*, or *Caribou*, of the French Canadians; *Cervus Tarandus*, of Linnæus, Sabine, Richardson, Ross, Harlan, and James Clark Ross; *Rein-deer* or *Rain-deer*, of Drage, Dobbs, Pennant, Cartwright, Franklin, Godman, and James Clark Ross; *Rein-deer*, or *Caribou*, of Richardson; *Attehk*, of the Cree Indians; *Etthin*, of the Chippeways and other Northern Indians; *Tooktoo*, of the Esquimaux (Richardson); *Tukta*, of the Greenlanders (Fabricius); *Rhen*, of the Swedes; *Rhenne*, of the French; *Boetsoi*, of the Laplanders; *Common Deer*, of Hearne, Parry, and Lyon (Richardson); *Rhen-deer* and *Rein-deer*, of the English.

Var. *α*. Arctica. Barren Ground Caribou (Richardson).

Common Deer, of Hearne; *Bedsee-awseh*, of the Copper Indians and Dog-Ribs; *Bedsee-choh* (male), *Tsootai* (female), *Tampeh* (female with a fawn), of the same; *Took-too*, of the Esquimaux, *Took-Took* dual, *Took-Toot* plural (Richardson); *Tukta*, of the Greenlanders (*Pangnek*, male; *Kollowak*, female; *Norak*, young. Fabricius).

Var. *β*. Sylvestris. Woodland Caribou (Richardson).

Caribou, of Theodat, La Hontan, Charlevoix, &c.; *Rein-deer*, of Drage, Dobbs, &c.; *Attehk*, of the Cree Indians; *Tantseeah*, of the Copper Indians (Richardson).

Geographical Distribution.—Northern Europe, Asia, and America. Captain James Clark Ross, in the Appendix to Sir John Ross's last voyage says, that although this animal was seen in great numbers on the Isthmus of Boothia, only one individual was killed in the course of their late voyage. It was a fine buck, of larger size than ordinary, and weighed 250 lbs.; the average of those killed at Spitzbergen and Melville Island did not exceed half that weight. The does arrive about the middle of April, the bucks nearly a month later; and herds of several hundreds were seen about the isthmus towards the end of May. Although they migrate towards the middle of September to milder climes, yet stragglers are occasionally seen in the winter. They are, indeed, spread, as Mr. Bennett observes, 'abundantly through all the habitable parts of the Arctic regions and the neighbouring countries, extending in the New Continent to a much lower latitude than in the old, and passing still farther south on all the principal mountain chains. In America, the southern limit of the rein-deer across nearly the whole continent appears to be about the parallel of Quebec; but the animal is most numerous between 63° and 66°. Passing westwards, it is said to be unknown in the islands interposed between America and Asia, but is again abundant in Kamtschatka, throughout nearly the whole of Siberia, in Northern Russia, Sweden, and Norway, and more especially in Finmark and Lapland. In these latter countries the numbers of the few wild herds that still exist are suffering a constant diminution, every art being put in practice by the hardy natives to reclaim and domesticate an animal which constitutes their sole property, the source of all their comforts, and the very means of their existence; without which their land would actually be, as at a first glance it seems, a bleak and uninhabitable desert. According to M. Cuvier, the Baltic forms in Europe its southern limit; in Asia, however, it extends along the Ural chain to the foot of the Caucasus; and we

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e memoir is supposed to have been published by Linnæus under the f his pupil.

have the authority of a passage in Cæsar's Commentaries, which can scarcely apply to any other animal, for its having existed in his day in the Hercynian Forest. The boundaries of this immense tract of woodland are certainly not very well defined; but this location would imply, at all events, a more southern European habitat than any that is at present known. Again, crossing the ocean, we find the rein-deer at Spitzbergen in Greenland, and in Newfoundland; but it has been said by Pennant, and this has been lately repeated by Dr. Richardson, in his valuable zoology of the fur countries of North America, not to be known in Iceland. This statement, which was scarcely true at the time when Pennant wrote, is not by any means correct, as refers to the present day. About sixty years since, as we learn from Van Troil's Letters on Iceland, thirteen of these animals were imported from Norway, ten of which dying on the passage, only three were landed. These were turned out into the mountains, and have since multiplied to such an extent, in the interior and unfrequented parts of the country, that their progeny was estimated by Count Trampe, the governor, in 1809, the period of Dr. Hooker's visit, at no less than five thousand head. Herds of forty, sixty, or even a hundred individuals are said, both by Dr. Hooker and by Sir George Mackenzie, who visited the island in the following summer, to be not uncommon in the mountains. They are, however, of little use to the inhabitants, who have made no attempts to domesticate them, and are too poor to purchase powder and ball for their destruction. It does not appear indeed that they are much sought after, the cow and the sheep thriving extremely well upon the island, and supplying the place of the deer in almost every respect. We may add that, according to Mr., (now Sir Arthur) Brooke, an importation of six bucks and twenty-four does took place in 1777, about seven years after the period of the first introduction of the animal into Iceland.' (*Gardens and Menagerie of the Zoological Society*, vol. i.)

The size of the rein-deer, widely spread as it is, varies very much according to the accidents of climate; and if authors are to be credited, their weight ranges from 60 to 400 lbs. The latter is probably an exaggeration, but it is evident that the weight increases in proportion to the proximity of the animal to the Pole. According to Dr. Richardson, the bucks of the variety called *The Barren-Ground Caribou* weigh, exclusive of the offal, when in good condition, from 90 to 130 lbs., whilst he describes the *Woodland Caribou* as much larger; and Captain, now Sir John Franklin, makes the weight of the latter from 200 to 240lbs. The buck killed on the Isthmus of Boothia was, as we have seen, 250 lbs.; while the average of three killed at Spitzbergen and Melville Island did not exceed half that weight. The rein-deer of Norway and Sweden are diminutive when compared with those of Finmark and Lapland, which in their turn yield to those of Spitzbergen; and these again fall short of the more Polar races. The sledge-deer of the Laplanders is small, when compared with those reared by the Tungusians of the north of Asia, who ride upon them.

Food, Habits, Chace.—The food of the rein-deer varies with the seasons and the climate. Lapland, says Hoffberg, in the memoir above quoted, is divided into two tracks, called the alpine and woodland country. Those immense mountains, called in Sweden Fjellen, divide that country from Norway, extending towards the White Sea as far as Russia, and are frequently more than twelve miles in breadth. The other, called the woodland division, lies to the east of this, and differs from the neighbouring provinces of Norway by its soil, which is exceedingly stony and barren, being covered with one continued tract of wood, of old pine-trees. This tract has a very singular appearance. The trees above are covered over with great quantities of a black hanging lichen, growing in filaments resembling locks of hair, while the ground beneath appears like snow, being totally covered with white lichens. Between this wood and the Alps lies a region called the Woodland, or Desert Lapmarc, of thirty or forty miles in breadth, of the most savage and horrid appearance, consisting of scattered uncultivated woods, and continued plains of dry barren sand, mixed with vast lakes and mountains. When the mosses on part of this desert tract have been burnt, either by lightning or any accidental fire, the barren soil immediately produces the white lichen which covers the lower parts of the Alps. The rein-deer in summer seek their highest parts, and there dwell amidst their storms and snows, not to fly the heat of the lower regions, but to avoid the gnat and gad-fly. In winter these intensely cold mountains, whose tops reach high into the atmosphere, can no longer support them, and they are obliged to return to the desert and subsist upon the lichens. Of these its principal food is the rein-deer lichen. There are, says Hoffberg, two varieties of this; the first is called *sylvestris*, which is extremely common in the barren deserts of Lapland, and more particularly in its sandy and gravelly fields, which it whitens over like snow; its vast marshes, full of tussocks of turf, and its dry rocks are quite grown over by it. The second variety of this plant, which is less frequent than the former, is named the Alpine; this grows to a greater height, with its branches matted together: it has this name, because when those mountains are cleared of their wood the whole surface of the earth is covered with it; yet it is seldom to be found on their tops. When the woods become too luxuriant the Laplander sets fire to them, as experience has taught him that when the vegetables are thus destroyed, the lichen takes root in the barren soil and multiplies with facility; though it requires an interval of eight or ten years before it comes to a proper height. The Laplander esteems himself opulent who has extensive deserts producing this plant exuberantly: when it whitens over his fields, he is under no necessity of gathering in a crop of hay against the approach of winter, as the rein-deer eats no dried vegetable, unless perhaps the river horsetail (*Equisetum fluviatile*). They root for this lichen under the snow like swine in a pasture; their foreheads, nose, and feet are guarded with a hard skin closely attached to those parts, that they may not be hurt by the icy crust which covers the surface of the snow. The very strong shoes which the Laplander esteems so much are made of these parts of the hide. It sometimes happens (but very rarely) that the winter sets in with great rains, which the frost immediately congeals; the surface of the earth is covered with a coat of ice before the snow falls, and the lichen is entirely encrusted and buried in it: thus the rein-deer is sometimes starved, and a famine attacks the Laplanders. In such an exigence they have no other resource but felling old fir-trees grown over with the hairy liverworts. These afford but a very inadequate supply even for a small herd, but the greater part of a large one, in such a case, is sure to perish with hunger. In the summer, when the rein-deer ranges upon the Alps, a number of plants afford it food. Hagstrom states that it refuses to eat forty-six species, the names of which he gives. Dr. Richardson states that the *Barren-ground Caribou*, which resort to the coast of the Arctic sea in summer, retire in winter to the woods lying between the 63° and the 66° lat., where they feed on the *Usneæ*, *Alectoriæ*, and other lichens which hang from the trees, and on the long grass of the swamps. About the end of April, when the partial melting of the snow has softened the *Cetrariæ*, *Cornicularlæ* and *Cenomyces*, which clothe the Barren Grounds like a carpet, they make short excursions from the woods, but return to them when the weather is frosty. In May the females proceed towards the sea-coast, and towards the end of June the males are in full march in the same direction. At that period the sun has dried up the lichens on the Barren Grounds, and the caribou frequent the moist pastures which cover the bottoms of the narrow valleys on the coasts and islands of the Arctic sea, where they graze on the sprouting *carices* and on the withered grass or hay of the preceding year, which is at that period still standing and retaining part of its sap. Their spring journey is performed partly on the snow, and partly, after the snow has disappeared, on the ice covering the rivers and lakes, which have in general a northerly direction. Soon after their arrival on the coast the females drop their young; they commence their return to the south in September, and reach the vicinity of the woods towards the end of October, where they are joined by the males. This journey takes place after the snow has fallen, and they scrape it away with their feet to procure the lichens, which are then tender and pulpy, being preserved moist and unfrozen by the heat still remaining in the earth. Except in the rutting season, the bulk of the males and females live separately; the former retire deeper into the woods in the winter, whilst herds of the pregnant does stay on the skirts of the Barren Grounds, and proceed to the coast very early in the spring. Captain (now Sir William) Parry saw deer on Melville peninsula as late as the 23rd of September, and the females with their fawns made their first appearance on the 22nd of April. The males in general do not go so far north as the females. On the coast of Hudson's Bay the *Barren-ground Caribou* migrate further south than those on the Coppermine or Mackenzie Rivers, but none of them go to the southward of Churchill. The lichens on which the Caribou principally feed whilst on the Barren Grounds are *Cornicularıæ, tristis, divergens*, and *ochrileuca, Cetrariæ, nivalis, cucullata*, and *Islandica*, and *Cenomyce rangiferina*. (Fauna Boreali-Americana.) In the Isthmus of Boothia the rein-deer does arrived about the middle of April, the bucks nearly a month later; and herds of several hundreds were seen about the isthmus towards the end of May. Numbers of the fawns, which at that period are in a very weak state, are killed by the natives, who hunt them with their dogs; and the does themselves often fall victims to their attachment to their offspring. Captain James Ross states that the rein-deer feeds on the *Usneæ, Alectoriæ, Cetrariæ*, and other lichens, in the early part of spring; but as the summer advances the young and tender grass fatten it so quickly, that in August they have been killed with several inches thick of fat on their haunches. In this state the meat is equal to the finest English venison, but is most tasteless and insipid when in poor condition. (Appendix to Sir John Ross's *Last Voyage*.)

That the lichen is not absolutely necessary as an article of food to the rein-deer, was proved by the length of time during which a female of the white variety lived at the gardens of the Zoological Society of London in the Regent's Park. She lived and throve through two successive winters, and died in 1830. Her food was principally dry provender, for the small quantity of grass which she could have cropped in the same small inclosure wherein she was always kept, must have been very small. The report drawn up by Mr. Yarrell on the morbid appearances, stated inflammation of the brain, lungs, and small intestines, which existed in a small degree in the latter. The mesenteric glands were diseased, but not to the extent that might have been expected in an animal that had been many years in an artificial state. The reporter stated that he had no doubt that the inflammation of the lungs was the primary cause of death.

Whilst on the subject of the food of the rein-deer, we must not omit the propensity (a morbid one probably) attributed by Sir Arthur Brooke to the rein-deer of eating lemmings (*Hipudæus Norvegicus, Mus Lemmus*, Linn.,) not habitually, but accidentally. The lemmings, it should be remembered, are said to feed on the *rein-deer lichen*. Captain Franklin mentions an analogous propensity in the American rein-deer, which, he says, 'are accustomed to gnaw their fallen antlers, and are said to devour mice.' The gnawing of the fallen antlers may be to correct acidity, as a cow may frequently be seen to gnaw bones for the same purpose.

Our limits will not allow us to detail the different modes of hunting the rein-deer, however interesting the subject may be: suffice it to say that the caribou travel in herds varying in number from eight or ten to two or three hundred; their daily excursions being generally towards the quarter from which the wind blows, and that the Indians kill them with bows and arrows or guns, sometimes approaching by means of a disguise, sometimes taking advantage of rocks or other shelter, and always greatly assisted by the curiosity and unsuspecting nature of the deer themselves. They also take the rein-deer in snares, or spear them as they are crossing rivers or lakes. The Esquimaux take them in traps ingeniously formed of ice and snow. A single family of Indians will sometimes destroy two or three hundred in a few weeks; and in many cases they are killed for the sake of their tongues alone. The reader will find a graphic account of the Esquimaux method of taking them in Captain Lyon's 'Private Journal,' p. 336; and a description of the deer found in use among the Chepewyans (Chippeways), in Hearne. Captain Franklin relates the ingenious methods pursued by the Copper Indians and Dog-Ribs. Captain James Ross remarks that the natives of Boothia seldom hunt the rein-deer in the spring, and then the bow and arrow is the only mode of killing it; but in the autumn, as the animal returns from the north in fine condition, they are destroyed in great numbers by parties of the natives driving them into the water, whilst others in canoes kill them with spears at their leisure. (Appendix to Sir John Ross's *Last Voyage*.)

Utility to Man.—To the Laplander particularly, the rein-deer is all in all. According to Hoffberg, the mountaineer very often possesses three or four hundred, or even a thousand head; the woodman very rarely above one hundred. As a domestic animal, yielding a quantity of the most delicious food, and occupying the place of the cow and the ox, it is invaluable. As a beast of burthen, its importance is equally great, and its organization is adapted to the icy wastes, over which it forms the Laplander's sole medium of communication, no less than that of the camel is framed for those arid deserts which, without the latter animal, would be impassable. The domestic economy of the Laplanders, as depending on the rein-deer, is a most interesting subject, to which we can here only advert, referring the reader for information on the subject to Hoffberg's interesting paper on the subject above quoted; to Sir Arthur de Capell Brooke's *Winter in Lapland*; and to the 1st vol. of *The Menageries*, published by the Society for the Diffusion of Useful Knowledge, for details. The well-known and beautiful lines of Thomson, ('Seasons—Winter') are no fiction, but a true summary of the benefits of this most useful animal. The weight which it *can* draw when harnessed to a sledge is said to be 300 lbs.: but 240 lbs. form the general limit of the burthen. The tales told of its swiftness, when thus employed, would appear almost incredible if not so well attested as they are. In a race of three deer with light sledges, started by Pictet, who went to the north of Lapland in 1769 to observe the transit of Venus, the first performed 3089 ft. 8 in. and $\frac{96}{100}$ in two minutes, making a rate of nearly 19 English miles an hour the second went over the same ground in three minutes, and the last in three minutes twenty-six seconds. One is recorded to have drawn an officer with important dispatches in 1699, 800 English miles in forty-eight hours; and the portrait of the poor deer which fell dead at the end of its wonderful journey, is still preserved in the palace of Drotningholm, in Sweden. Journeys of 150 miles in nineteen hours are said not to be uncommon.

To the natives of North America the rein-deer is only known as a beast of chace, but it is a most important one: there is hardly a part of the animal which is not made available to some useful purpose. Clothing made of the skin is, according to Dr. Richardson, so impervious to the cold that, with the addition of a blanket of the same material, any one so clothed may bivouack on the snow with safety in the most intense cold of an Arctic winter's night. The venison, when in high condition, has several inches of fat on the haunches, and is said to equal that of the fallow-deer in our best English parks; the tongue and some of the tripe are reckoned most delicious morsels. *Pemmican* is formed by pouring one-third part of melted fat over the pounded meat and incorporating them well together. The Esquimaux and Greenlanders consider the stomach or paunch, with its contents, a great delicacy, and Captain James Ross says that those contents form the only vegetable food which the natives of Boothia ever taste. For further particulars, and they are many and interesting, we must refer to Dr. Richardson's *Fauna Boreali-Americana*, and the works of our gallant northern voyagers generally.

[Rangifer Tarandus.]

Highly excellent as an article of food, and useful domestically as this animal is, we do not think that it can ever be introduced with much success into the British islands. Not that there would be much difficulty about the food for the deer; it is space that is wanting. A long succession of generations would be required before the migratory habits of the rein-deer could be got rid of, and possessing as we do the best venison, and the finest breed of horned cattle and horses, there seems no very good reason for repeating the experiments which have already been tried and have failed.

* *

Upper antlers alone compressed.

The Fallow-Deer. (*Daims*, of the French.)

Example.—*The common Fallow-deer.* This well-known ornament of our parks is the *Hydd* (Buck), *Hyddes* (Doe), *Elain* (Fawn), of the antient British: *Le Daim* (Buck), *La Daime* (Doe), *Faon* (Fawn), of the French; *Daino* (Buck), *Damma* (Doe), *Cerbietto, Cerbietta* (Fawn), of the Italians; *Gama, Corza* (Buck), *Venadito* (Fawn), of the Spanish; *Corza* (Buck), *Veado* (Fawn), of the Portuguese; *Damhirsch*, of the Germans; *Dof, Dof Hjort*, of the Swedes; *Daae, Dijr*, of the Danes; *Dama vulgaris*, of Gesner; *Cervus palmatus*, of Klein; *Cervus platyceros*, of Ray; and *Cervus Dama*, of Linnæus.

It is not certain whether the common fallow-deer is the πρόξ of Aristotle. Buffon and others are of that opinion; but M. Camus, who seems very well disposed to coincide with such opinion if he could, gives good reasons for doubt. Pennant considers the *Platycerata* of Pliny (book xi., c. 37), and the *Eurycerata* of Oppian (*Cyneg.* lib. ii., lin. 293) to have been our fallow-deer.

Pennant, speaking of the two varieties, the spotted and the deep brown, says, on the authority of Collinson, that they were introduced into this country by James I. from Norway, where he passed some time when he visited his intended bride, Anne of Denmark, and he remarks (citing Llywd) that one of the Welsh names of the animal, *Geifr Danys*, or *Danish goat*, implies that it was brought from some of the Danish dominions. James, who observed their hardiness, brought them first into Scotland and thence to Enfield Chace and Epping, to be near his favourite palace, Theobalds. When Pennant wrote, they were, according to him, scarcely known in France, but were sometimes found in the North of Europe. In Spain, he observes, they are extremely large, and that they are met with in Greece, the Holy Land, and in China. For the two latter localities he quotes Hasselquist, who says he saw it in Mount Thabor, and Du Halde. Pennant goes on to state that, in every country except our own, these deer are in a state of nature unconfined by man; but they are, and for some time have been, confined in parks on the continent as they are in England. In Moldavia and Lithuania they are said to be found wild. Cuvier observes that they have become common in all the countries of Europe, and that they appear to have come originally from Barbary. In a note to his last edition of the 'Règne Animal' he states that since the publication of the second edition of his 'Ossemens Fossiles' he had received a wild fallow-deer (*Daim*) which had been killed in the woods to the south of Tunis.

The species is so well known that a lengthened description of the animal, its habits, &c., would be needlessly occupying space in a work of general reference. Besides the varieties above mentioned, there are many others, as is generally the case with reclaimed or half reclaimed animals: one variety is milk-white. Pennant remarks that in the old Welsh laws a fallow-deer was valued at the price of a cow, or, as some say, a he-goat.

[Dama vulgaris.]

γ

Horns sessile, with the antlers, both basilary and median, conical.

The True Stags[*]

*

Old continent and its islands.

Example.—The *Common Stag*, or *Red Deer*; *Carw* (Stag), *Ewig* (Hind), *Elain* (Young or Calf), of the antient British; *Le Cerf* (Stag), *La Biche* (Hind), *Faon* (Young or Calf), of the French; *Cervio, Cervia*, of the Italians; *Ciervo, Cierva*, of the Spanish; *Cervo, Cerva*, of the Portuguese; *Hirtz, Hirsch* (Stag), *Hind* (Hind), *Hinde Kalb* (Calf), of the Germans; *Hart* (Stag) and *Hinde*, of the Dutch; *Hjort, Kronhjort* (Stag) and *Hind*, of the Swedes; *Kronhjort, Hind, Kid* or *Hind kalv*, of the Danes.

[Cervus Elaphus.]

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[*] N.B. Mr. Smith makes a subgenus of the True Stags under the name of Elaphus.

This noble species is doubtless the ἔλαφος of Aristotle, and was well known to the antients generally. It is a native of the forests of the whole of Europe and Asia, where the climate is temperate. In England it is intimately blended with the old oppressive forest laws which valued the life of a man at less than that of a stag, and with some of our legends of deadly feud: Chevy Chace for instance. Of the hunting we could say much, and of the old southern and stag-hounds that were employed in the more dilatory pursuit, and of the gallant grey-hounds, especially those of the north, that were wont to pull it down, nor do we forget the tinchel, identified with rebellion. But we must not indulge in a treatise on the forest-laws or on wood-craft here, and shall only observe that in the south of England his Majesty's pack now stands alone. The stag-hounds that formerly roused the deer on the moors of the west of England, are at present dispersed: and if this noble sport is to be again enjoyed in Somerset and Devon, we fear some time must elapse before a pack can be got up. In Scotland it is the rifle of the deer-stalker principally that now brings the stag down.

The red-deer is so well known that we need not repeat here the description of the animal and its habits, which will be found in most books of natural history. It has canine teeth in the upper jaw. Of the size to which the species sometimes grow the following record will serve as an example: 'When I was at Invercauld,' says Pennant, 'Mr. Farquharson assured me that he knew an instance of one that weighed eighteen stone Scots, or three hundred and fourteen pounds, exclusive of the entrails, head, and skin.' The same author states that in the old Welsh laws a stag was valued at the price of an ox.

* *

New Continent.

Example.—*The Wapiti Stag*, of Pennant, Arctic Zool.; *Wewaskiss*, of Hearne; *Waskeesews*, or *Red-deer*, of Hutchins; *Red-Deer*, of Umfreville; *the Elk*, of Lewis and Clark; *the American Elk*, of Bewick; *Wapiti*, of Barton and Warden; *Le Wapiti*, of F. Cuvier; *the Wapiti* (C. Strongyloceros), of Smith; *Red-deer*, of the Hudson's Bay Traders; *La Biche*, of the Canadian Voyagers; *Wawaskeesho*, *Awaskees*, and *Moostosh*, of the Cree Indians (Richardson). It is also *Le Cerf du Canada*, of Cuvier, who makes it the *Cervus Canadensis*, of Gmelin (Buffon), and *C. Strongyloceros*, of Schreber; and *Cerf Wapiti*, of Lesson, who states it to be *Cervus Wapiti*, of Mitchell, and *Cervus major*, of Ord. It may be also the *Stag of Carolina*, of Lawson, but he describes it as 'not so large as in Europe, but much larger than any fallow-deer,' and he says they are always fat with some delicate herbage that grows on the hills, whereas the modern travellers describe the Wapiti as frequenting the savannahs or the clumps of wood that skirt the plains. There is hardly any doubt that it is the Stag of America (*Cervus major Americanus*) of Catesby. 'This beast,' says the author last named, 'nearest resembles the European red-deer, in colour, shape, and form of the horns, though it is a much larger animal, and of stronger make. Their horns are not palmated, but round, a pair of which weighs upwards of thirty pounds. They usually accompany buffaloes (Bisons), with whom they range in droves in the upper and remote parts of Carolina, where, as well as in our other colonies, they are improperly called elks. The French in America call this beast the *Canada Stag*. In New England it is known by the name of the *Grey Moose*, to distinguish it from the preceding beast (the true Elk), which they call the *Black Moose*.' Dr. Richardson states that it is without doubt the *Canada Stag*, of various authors, but, as M. F. Cuvier has observed, the want of a pale mark on the rump in Perrault's figure is sufficient to excite a doubt of its being the *Cervus Canadensis*, of that author. Indeed he does not think it at all improbable that this figure is that of the *Cervus Macrotis*, which may hereafter prove to be an inhabitant of Upper Canada.

Geographical Distribution.—Dr. Richardson says that this animal does not extend its range farther to the north than the 56th or 57th parallel of latitude, nor is it found to the eastward of a line drawn from the south end of Lake Winipeg to the Saskatchewan in the 103rd degree of longitude, and from thence till it strikes the Elk River in the 111th degree. To the south of Lake Winipeg he thinks it may perhaps exist farther to the eastward. He adds that they are pretty numerous amongst the clumps of wood that skirt the plains of the Saskatchewan, where they live in small families of six or seven individuals, and that they feed on grass, on the young shoots of willows and poplars, and are very fond of the hips of the *rosa blanda*, which forms much of the underwood in the districts which they frequent.

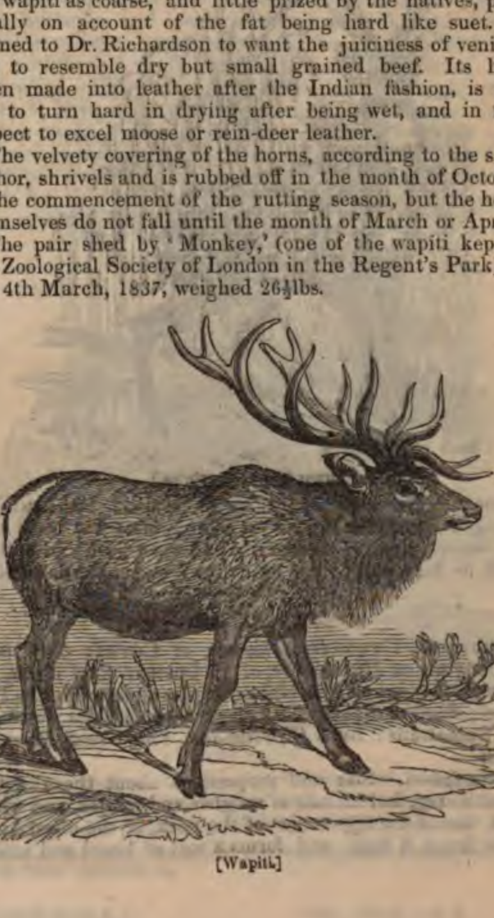
Description.—Height at the shoulders 4½ feet, more than a foot exceeding that of the common stag. All the upper parts and the lower jaw of a somewhat lively yellowish-brown; a black mark from the angle of the mouth along the side of the lower jaw; a brown circle round the eye. The first antlers depressed in the direction of the facial line. Neck, mixed red and black, with coarse black hairs descending from it like a dewlap, deeper in colour than the sides. From the shoulders to the hips French grey; a pale yellowish patch on the buttocks, bounded on the thighs by a black line; tail yellowish, 2½ inches long, whereas it is nearly seven in the European stag. The hair of a mean length on the shoulders, the back, the flanks, the thighs, and the under part of the head; that on the sides and limbs shorter, but the hair is very long on the sides of the head posteriorly and on the neck, particularly below, where they form the kind of dewlap above alluded to. On the posterior and outer aspect of the hind leg there is a brush of tawny hair which surrounds a narrow long horny substance. Ears white within and clothed with tufted hair, externally of the same colour as the neighbouring parts. A naked triangular space round the larger lachrymal sinus near the inner angle of the orbit. Hoofs small. Like the common stag, the wapiti has a muzzle, upper canine teeth, and a soft tongue. The quality of the hair is brittle, and there is a short wool beneath it. Dr. Richardson thinks that the Crees give it the name of 'Stinking Head' on account of the large suborbital opening.

Habits.—Hearne gives them a character for stupidity surpassing that of all the deer kind. He says that they frequently make a shrill whistling and quivering noise, not very unlike the braying of an ass. Mr. Drummond, who saw many in his journeys through the plains of the Saskatchewan, informed Dr. Richardson that it does not *bell* like the English deer. F. Cuvier describes the cry as prolonged and acute, consisting of the successive sounds *a*, *o*, *u*, (French), uttered with so much strength as to offend the ear.

Utility to Man.—Dr. Richardson describes the flesh of the wapiti as coarse, and little prized by the natives, principally on account of the fat being hard like suet. It seemed to Dr. Richardson to want the juiciness of venison, and to resemble dry but small grained beef. Its hide, when made into leather after the Indian fashion, is said not to turn hard in drying after being wet, and in that respect to excel moose or rein-deer leather.

The velvety covering of the horns, according to the same author, shrivels and is rubbed off in the month of October, at the commencement of the rutting season, but the horns themselves do not fall until the month of March or April.

The pair shed by 'Monkey,' (one of the wapiti kept by the Zoological Society of London in the Regent's Park) on the 4th March, 1837, weighed 26½lbs.



[Wapiti.]

That the wapiti will live and thrive well and propagate in Great Britain, there is now no doubt; but grand as the appearance of the animal is, it is not probable that it will be bred here to any great extent on account of the inferior quality of its venison.

δ.

Horns sessile, branched, with a solitary basilary antler, without median antlers, and the upper antler ordinarily simple.

THE AXIS DEER.

Spotted Species.

Example.—*The spotted Axis*, Ἄξις, of the antients (Ctesias); *Cervus Axis*, of authors; *Axis maculatus*, of Smith.

Description.—Size and general form nearly resembling that of the common fallow-deer. The skin is at all times of a rich fawn colour spotted with white; but, as Mr. Bennet observes, it is only during the summer that any similarity exists in the colours of the two species, for the fallow-deer changes in winter to a uniform brown, while the axis retains its spotted livery throughout the year. Height at the shoulder two feet six or seven inches. The distribution of the spots varies in different individuals. The ground colour changes to nearly black along the back; the under parts are snow white. Flanks, sides, shoulders, hind quarters, and part of the neck, spotted as above mentioned. There is a broad dusky spot on the forehead, and a line of the same colour extends along the middle of the nose. The male has no canine teeth, nor has the female any horns; she is generally less in size than the male, and resembles him much in colour, but may be distinguished, it is said, by a white longitudinal line on the flanks. The young resemble the parents.

Geographical Distribution.—India and the larger islands of the Indian Archipelago; very abundant in Bengal and on the banks of the Ganges.

Habits, &c.—The axis haunts the thick jungles in the vicinity of water, and the British sportsmen hunt it under the name of the *Spotted Hog Deer*. It feeds in the night, and is timid, indolent, and mild, excepting when the females have young, and then the male is bold and fierce.

[Cervus (Axis) Maculatus.]

The axis is easily domesticated, and in England has propagated freely in captivity. The species has been kept with success both in menageries and open parks, to both of which its form and colour make it an elegant ornament.

* *

Spotless species.

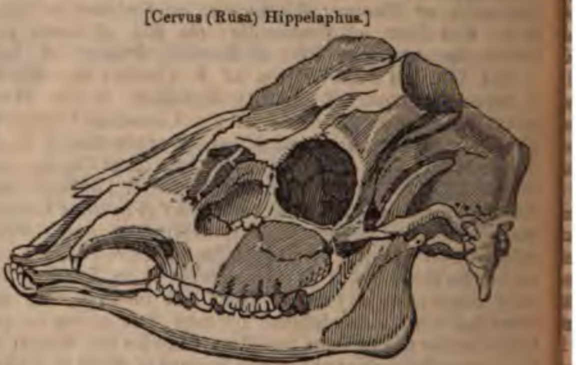
Example.—*Cervus Hippelaphus*, of Cuvier; *Cerf noir du Bengale, ou Hippelaphe*, of F. Cuvier; *Cerf d'eau, ou Mejanganbanjoe*, of the Malays of Java, according to Duvaucel; *Rusa* or *Roussaitan* (Black Stag), of the Javanese and Sumatrans; *Rusa Hippelaphus, The Great Rusa*, of Smith.

Description.—Size and proportions about those of the common stag, but its hair is rougher and harder, and when adult, that of the upper part of the neck, of the cheeks and of the throat is long, and forms a sort of beard and mane. In winter its colour is of a greyish brown more or less deep; in summer it is of a brighter and more golden brown. The croup is a pale yellow, and the tail is brown terminated by rather long hair.

Locality.—Supposed to be Bengal and Sumatra; probably the islands of the Indian Archipelago.

This is supposed to be the *Hippelaphus* of Aristotle; but G. Cuvier who once was of that opinion, seems in the last edition of his 'Règne Animal' to consider that another species, *Cervus Aristotelis*, Cuv., living in the north of India, is the animal alluded to by the Greek Zoologist.

[Cervus (Rusa) Hippelaphus.]



[Skull of Cervus Hippelaphus.]

ε.

Horns sessile, branched, with a median but no basilary antler.

N.B. A white line bordered with black cutting the end of the muzzle obliquely.

*

Of the Old Continent.

Example.—*The Roe*, or *Roebuck*, probably the Δορκάς, of Aristotle; *Iorcas* and *Dorcas*, of Oppian; *Caprea*, of Pliny (Book xi. c. 37); *Caprea, Capreolus, Dorcas*, of Gesner; *Capreolus*, of Ray and of Sibbald; *Cervus Capreolus*, of Linnæus; *Cervus minimus*, of Klein; *Iwrch* (male), *Iyrcheli* (female), of the antient British; *Le Chevreuil*, of the French; *Capriolo*, of the Italians; *Zorlito, Cabronzillo montes*, of the Spanish; *Cabra montes*, of the Portuguese; *Rehbock* (male) *Rehgees*, of the Germans; *Radiur, Rabock*, of the Swedes; *Raaedijr Raaebuk*, of the Danes.

Description.—Length about 3 feet 9 inches; height before, about 2 feet 3 inches; behind, 2 feet 7 inches. Weight from about 50 to 60lbs. Length of horns from 8 to 9 inches; they are erect, round, and divided into three branches above; their lower part is deeply furrowed longitudinally. Those of a young buck in its second year are simple; in the third year a branch appears; the head is complete in the fourth year. In the winter the hair on the body is long, the lower part of each hair is ash-coloured, there is a narrow bar of black near the end, and the tip is yellow. On the face the hair is black tipped with yellow. The ears are a pale yellow on the inside, and covered with long In summer the coat is short and smooth, and of a reddish colour. The chest, belly, legs, and inside of ghs, are yellowish white; the rump is pure white, and very short. On the outside of the hind leg, below t, is a tuft of long hair.

raphical Description.—' The Roebuck was formerly nmon in Wales, in the north of England, and in d, but at present the species no longer exists in any Great Britain, except in the Scottish Highlands.' the locality given by Pennant when he wrote; and s, that, according to Dr. Mouffet, it was found in s late as the reign of queen Elizabeth, and in great n the Cheviot hills, according to Leland, in that of he Eighth. That, at one time, the Roe inhabited hern parts of the kingdom is clear, if the information to the Editor of the last edition of the *British* is correct, for that states the discovery of seven or rns of the Roe in the peat beds near Romsey, in iire, together with the complete head of a beaver, teeth entire. In Ireland, the animal is not known. e frequent in France, and are found in Italy, Swe- Norway, and Siberia. Pennant, who gives these s, says that the first that are met with in Great Bri- in the woods on the south side of Loch Rannoch, shire; the last in those of Langwal, in Caithness; they are most numerous in the beautiful forests of ld, in the midst of the Grampians. They are still tively plentiful in Scotland. Sir James Carnegie ago had a battue, in which forty were killed. Sir Jardine states, that, south of the Forth, it is now e, one or two wilder parks only possessing a few; ent traces of its former abundance are found in the ounties, remains and skeletons being almost yearly ed from most of the larger peat mosses: in the woods of Westmoreland and Cumberland it still . The same author speaks of its frequency in many n countries, Germany, Silesia, &c. (*Naturalist's* Mammalia, vol. iii.)

, &c. The Roe does not keep in herds, but only tes in families in the lower coverts and less wild The female goes with young five months, and pro- o fawns at a birth, and these she conceals from . They are said to live twelve or fifteen years, and e to reproduce the species at the age of eighteen Pennant observes, that it is a tender animal, and uffon, who says, that in the hard winter of 1709 l was almost extinguished in Burgundy, and many ssed before it was restored again. It is gene- ed, either in the covert, or by the sportsman, who tside while the copse or wood is driven, with shot. very readily, and often without being apparently struck: we have heard instances of their being over with comparatively small shot. As soon as n the throat is cut, and the animal is hung up by legs on the fork of some tree to bleed.

[Capreolus Dorcas]

-Herbage and tender shoots of underwood in the They are said to be very fond of the *rubus sax-* lled in the Highlands the roebuck berry. In winter, when the ground is covered with snow, they browse on the tender branches of the fir and the birch.—(Pennant.)

Utility to Man.—The flesh is delicate food when well-killed, and the horns are used for handles of couteaux, &c.

Pennant states that in the old Welsh laws a roebuck was valued at the same price as a she-goat.

**

New Continent.

Examples, the *Guazapuco* deer, *Mazama paludosa* of Smith, *Cervus paludosus* of Desmarest and Lichtenstein, *Güazú-pucú* of D'Azara: and the *Guazuti* of D'Azara, *Mazama campestris* of Smith, *Cervus campestris* of F. Cuvier and Desmarest, *Cervus leucogaster ?* of Schreber. The former is nearly as large as the common stag of Europe, and of a reddish-bay, excepting the inside of the ears, the lower part of the breast, and the inside of the limbs, which are white. A dark-brown stripe runs irregularly down the face on each side of the lips; the eyebrows and cheeks are paler, and the muzzle is large. Locality, the lower districts of Paraguay. The horns of the latter are more slender than those of the former, generally with two snags only, and the animal is much less than the Guazapuco, being hardly more than two feet six inches at the shoulder. It frequents the open plains, and is so swift, that D'Azara says that a horse cannot overtake it. He adds, that the venison of the young deer is delicate, but that the flesh of the old is strong. There is a legend that if the flesh be applied to a wound inflicted by the bite of a poisonous serpent it will cure it. There is nothing remarkable about the colours, which are distributed as in the majority of the *Cervidæ;* but it is said sometimes to vary almost to white.

ζ

Horns sessile, simple, and in form of a stiletto.

THE BROCKETS* (*Les Daguets*) of the French, subgenus *Subulo* of Smith.

Example.—The *Guazu-pita* of D'Azara, *Coassou ? Subulo rufus* (Pita Brochet) of Smith, *Cervus rufus* of F. Cuvier and Desmarest.

Description.—Height about twenty-nine inches; general colour reddish-brown; inside of ears (hairs short), space round the lips, lower part of head and tail, hind part of belly, buttocks, and inside of fore-legs to knees, whitish. Females without horns, nearly of the same reddish tint, with a white spot above the nose and on the upper lip.

Locality.—The low moist woods of South America, where it lives in large herds, and as ten females are seen for one male, it is supposed that their appearance gave currency to the report of a form of deer on the New Continent without horns. They are very fleet only for the first burst, for they are soon run down by dogs, and are sometimes captured by the lasso and balls.

[Subulo rufus.]

The *Guazu-bira, Cervus nemorivagus* of Lichtenstein, *Bira Roe* of Smith, is another example of this form. D'Azara seems to be the first who noticed it. This delicate little deer is only twenty-six inches in length, and its aspect is said to approach that of the sheep, and to be less deer-like than that of the *Pita Brochet*. The ears are not so pointed at the extremity as those of the latter, and the lacrymal sinus is said to be nearly imperceptible.

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* Brocket, Brochet, and Pricket are the terms applied to a young male deer with its first or simple horns.

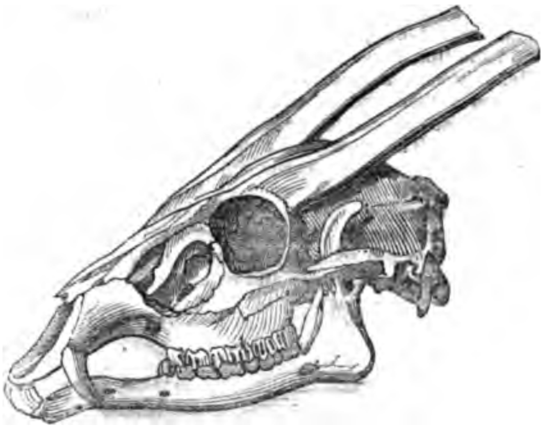
Description. Lower part of head and lips whitish. Space round the eyes, inside of fore-legs, and from lower part of breast to buttocks, whitish-cinnamon. Neck and all the other parts brownish, approaching to greyish, each hair being tipped with white. Horns short. *Locality* the same as that of the *Guazu-pita*.

[Subulo nemorivagus.]

η

Horns supported on a long osseous pedicle rising from the os frontis.

THE CERVULES (*Cervules* of the French, *Stylocerus* of Smith.)



[Skull of Muntjak.]

Example.—*The Muntjak, Chevreuil des Indes* of Allamand. (Buffon, Dutch edition.)

Dr. Horsfield gives the following as the synonyms of this species. *Cervus Muntjak, der Muntjak*, Zimmerman, 'Geographische Geschichte des Menschen und der vierfüssigen Thiere,' Leipzig, 1780. (From the communication of Pennant). *Cervus Muntjak*. *Cervus vaginalis*, Boddaert, 'Elen. Anim.' Rotterdam, 1785. *Cervus Muntjac*, Schreb., Säugthiere., Gmel., Fischer, Zoognos., Shaw, Gen. Zool.; *Cervus moschatus*, *Cervus subcornutus*, Blainv., 1816, 1822; *Cervus Muntjak ?* Raffles's Cat. Linn. Trans.; *Cervus Muntjac*, *Cervus Moschus*, Desm.

Description.—About one-fifth larger than the *roebuck*. Height at shoulders about two feet two inches; head pointed; eyes large, with lacrymal sinuses; ears rather large; tail short and flattened.

In the living animal there are on the face two rough folds of the skin, considerably distended and elevated, about an inch and a half apart above; and, following the direction of the prominent part of the forehead, they unite below, so as to mark the face with the letter V. In the dried subject the folds are contracted, and three distinct ribs appear, which, observes Dr. Horsfield, suggested to Pennant th name of rib-faced deer. General colour reddish-brow above; belly and front of the thighs pure white. Th male has large canines in the upper jaw; the female h none, nor has she horns.

Locality, Habits, Chase, &c.—Dr. Horsfield states th 'the Muntjak selects for its retreat certain districts, t which it forms a peculiar attachment, and which it neve voluntarily deserts. Many of these are known as the f vourite resort of our animal for several generations. The consist of moderately-elevated grounds, diversified by ridge and valleys, tending towards the acclivities of the mo considerable mountains, or approaching the confines of e tensive forests. Such districts are by no means uncommo in Java: they are covered with long grass, and shrubs an trees of moderate size, growing in groups or small thicket and they generally intervene between cultivated tracts an the deep forests. Their vegetation is peculiarly adapted t afford to our animal a very abundant supply of nourishment their surface is covered with long grass, *Saccharum spicatum* well known to persons who have visited the interior of Jav by the name of *Allang-Allang*, and the groves and thicket abound with *Phyllanthus Emblica*, Linn.: these two plant constitute its principal food. They also produce many species of *Hibiscus*, *Grewia*, *Urena*, and other malvaceou plants, all which are greedily eaten by the *Kidang*. Abou the middle of the dry season, in the Javanese winter, jus before the foliage is renewed, the shrubs and herbaceou plants covering the plains and small woods are, accordin to an old and universal custom in Java, set on fire; and thu these tracts are prepared for a new vegetation, which appears shortly before the annual rains, in a period that may be compared with an European spring. After the lapse of a few weeks, the ground and shrubs are covered with fresh verdure, and a most abundant supply of food is ready for the *Kidang*. These districts, being in most cases sparingly supplied with water, do not invite an extensive population: the *Kidang* is not molested by a few solitary hamlets, but the leaves of the *Convolvulus Butatas*, and of many leguminous and cucurbitaceous plants, which always surround the dwellings of the natives, afford it an occasional repast. Many of these hamlets might be enumerated, which would afford a pleasant recollection to those persons who have visited the native courts, or the eastern capitals. Jebres, Kayu-urib, and Pring-ombo near Surakarta, and Kaliwungu near Samarang, are among the most favourite. The native inhabitants of the hamlets dispersed through the districts in which the *Kidang* is found, do not possess means to undertake the chase; but it affords amusement both to Europeans and natives of rank, who engage in it in different modes with great ardour. The *Cervus Muntjak* has a strong scent, and is easily tracked by dogs. When pursued, it does not go off, like the stag, in any accidental direction: its flight indeed is very swift at first, but it soon relaxes, and taking a circular course, returns to the spot from which it was started. The natives, acquainted with the character of our animal, describe it as possessing a great portion of craftiness, combined with much indolence. After several circular returns, if the pursuit be continued, the kidang thrusts its head into a thicket, and in this situation remains fixed and motionless, as in a place of security, and regardless of the approach of the sportsmen. If it remains unobserved, it is still unwilling to quit its haunts; and experienced hunters, acquainted with its natural disposition, after an unsuccessful pursuit, return the following day, and in many cases find the kidang near the same spot. The chase of the kidang, by means of dogs, affords occasionally a favourite amusement to the natives of rank in Java. Many of these, especially in the more distant provinces, keep large packs for this purpose, which are regularly trained. The dogs, vulgarly denominated pariahs, are the indigenous breed of the island, in a state of imperfect domestication: there are several varieties: one of these greatly resembles the Sumatran dog, of which a description, accompanied by a figure, is given by General Hardwicke, in the 13th volume of the Transactions of the Linnean Society: the body is lank, and the ears erect: they are ferocious in their disposition, and rarely show any attachment to their masters. The natives of Java, like other Mahommedans, entertain prejudices unfavourable to dogs: they rarely treat them with kindness, or allow them to approach their persons; and it is only in extraordinary instances, or when they contribute to their amusement, that they feed or care for them: generally they are ill-treated, and left to provide for themselves, so that their famishing condition is disgusting to Europeans. Many of these dogs are extremely ardent and courageous in the pursuit of the kidang: when the chase commences, they are led with a line by an attendant to the spot: the peculiar exhalations soon discover the kidang: the dogs are discharged, and commence the pursuit with great ardour, while the sportsman follows more deliberately, and generally finds the dogs at bay with the kidang. The male animal possesses a great share of courage, and with its tusks makes a most vigorous defence: many dogs are wounded in the attack. The sportsmen uniformly are provided with remedies and applications, and by a simple suture attempt to unite those wounds which are not immediately fatal. In this operation they frequently succeed, and preserve their most valuable dogs; but in many cases the kidang makes fatal lacerations in the neck and breast, or lays open the abdomen. But although possessed of great courage, the life of the kidang is not tenacious, and the sportsman, on arriving at the spot, generally despatches it with small shot. The natives of the most distant districts are in the habit of bringing their best dogs to the capitals, on occasion of their half-yearly attendance, to perform the feudal services to the sovereigns, when their sports afford an occasional amusement to the European inhabitants. Other modes of chase are also employed by the natives of rank. One in particular is common in the western parts of the island: a district is surrounded by a line of hunters, and the kidang is driven in towards a central spot: forty or fifty animals are in this manner often obtained at a single pursuit. Many of the hunters are mounted, and the horses are trained to the chase. The sportsman endeavours to overtake the animal, and to kill it by a stroke with a sword. The inhabitants of Pugar and Blambangan, two provinces at the eastern extremity of Java, possessing a small population, but abounding in extensive plains and acclivities, which afford an ample range and abundant pasture to the kidang, are particularly skilled in this sport. The best horses are trained for it: the sportsman, without a saddle, mounts on the naked back, and carries on the pursuit with a frantic impetuosity at the risk of his limbs and neck. During my visit to these districts, I was frequently entertained by aged natives with narratives of their favourite sport, and of the dangers and accidents they had encountered on many occasions; but these had not diminished their ardour for this amusement. The native stag of Java is pursued in the same manner. In Banka a less arduous, but more destructive method is employed to take the kidang: a long rope of rattan is suspended, at a proper height above the ground, between two trees; numerous nooses, of the same material, hang from this, in a close and continued series, and the kidang, driven towards it, pursued by dogs and blinded by fear, does not perceive the slender rattan, and thrusting his head into a noose, is strangled on the spot. The kidang has other enemies and pursuers besides man: the tiger and leopard also approach its retreat, and many are annually destroyed by them. But in a mild climate a constant and regular supply of food abounds, and no great variation or decrease is observed in their number. The kidang is impatient of confinement, and is not fitted for the same degree of domestication as the stag. It is however occasionally found in the enclosures of natives and Europeans, but requires a considerable range to live comfortably: it is cleanly in its habits, and delicate in its choice of food. The flesh affords an excellent venison, which is often found on the tables of Europeans. The natives eat the males, and always present them in a conspicuous place in their feasts; but in consequence of some peculiarities in the habits of the females, they have an aversion to them as food.'

[Muntjak.]

FOSSIL DEER.

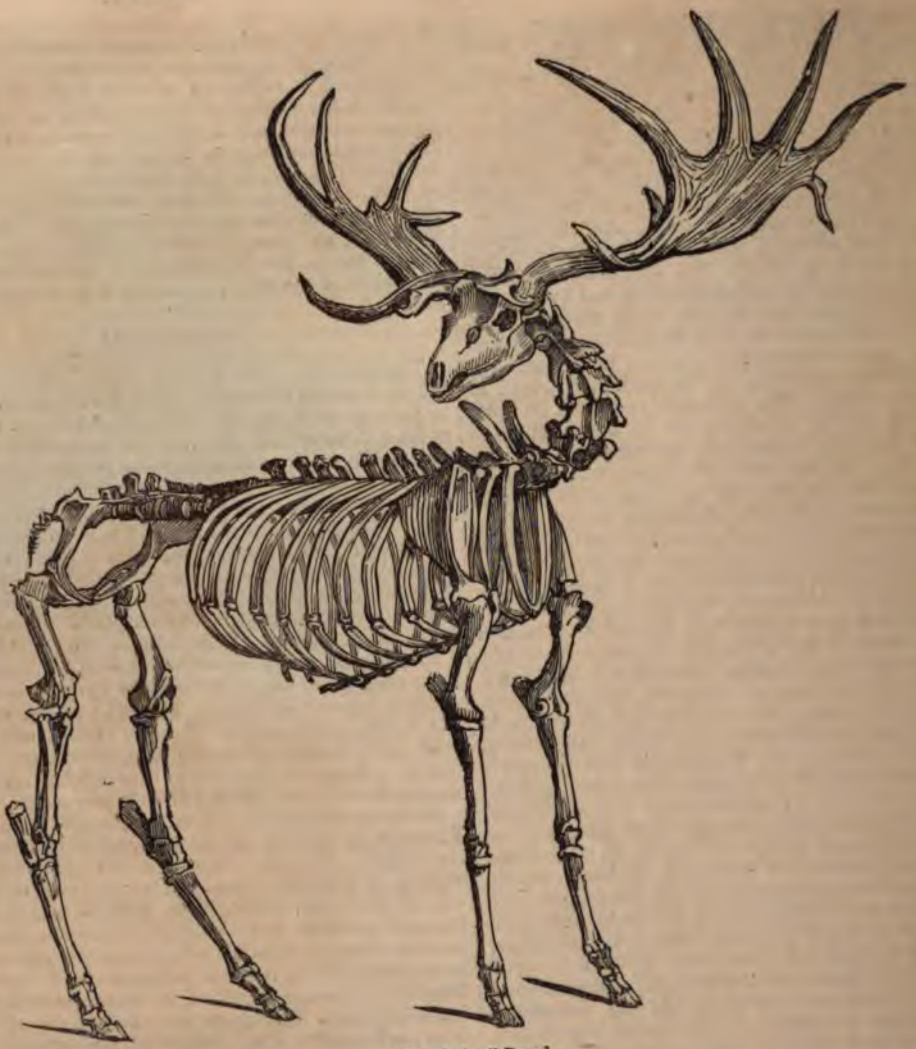
The remains of deer are sufficiently numerous in beds of the third period of the tertiary series, and in caverns. Thus in the cave at Kirkdale Dr. Buckland found evidences of at least three species, the smallest being very nearly of the size and form of a fallow-deer, the largest agreeing in size with, but differing in form from, the elk, and a third of intermediate size, approaching that of a large stag or red-deer. The skeletons of animals found in the recent shell-marls of Scotland, according to Mr. Lyell, all belong to species which now inhabit or are known to have been indigenous in Scotland. Several hundred, he observes, have been procured within the last century from five or six small lakes in Forfarshire, where shell-marl has been worked. Those of the stag (*Cervus Elaphus*) are stated to be the most numerous; and if the others be arranged in the order of their relative abundance, they will follow, according to Mr. Lyell, nearly thus:—Ox, boar, horse, dog, hare, fox, wolf, and cat. The beaver, he adds, seems very rare; but it has been found in the shell-marl of Loch Marlie in Perthshire, and in the parish of Edrom in Berwickshire.

Remains of deer occur in other ossiferous caverns besides Kirkdale, as in Banwell cave, in the Muggendorf caverns, the Grotte d'Echenoz, and that on the banks of the Meuse, at Chockier; as well as in the osseous breccias of Gibraltar, Cette, Nice, Corsica, and Antibes. M. Bertrand de Doue found among the bones entombed in and beneath volcanic matter near St. Privat d'Allier (Velay) a large proportion of remains, referable to at least four undetermined species of *Cervi*, in company with *Rhinoceros leptorhinus* and *Hyæna spelæa;* and M. Robert extracted from the ferruginous beds at Cussac (Haute Loire) the bones of seven species of deer (to two of which he assigns the names of *Cervus Solilhacus*, and *C. Dama Polignacus*,) accompanied by the bones of the antelope, *Bos Urus* and *Bos Velaunus*, two species of horse, *Elephas primigenius*, *Rhinoceros leptorhinus* and *Tapir Arvernensis*. Among the fossil species enumerated we find, under section *a*, *Cervus giganteus*, *Cervus Euryceros*, and *Cervus Americanus;* under section β*, *Cervus Guettardi;* and under β**, *Cervus Hibernus*, and *Cervus Somonensis*.

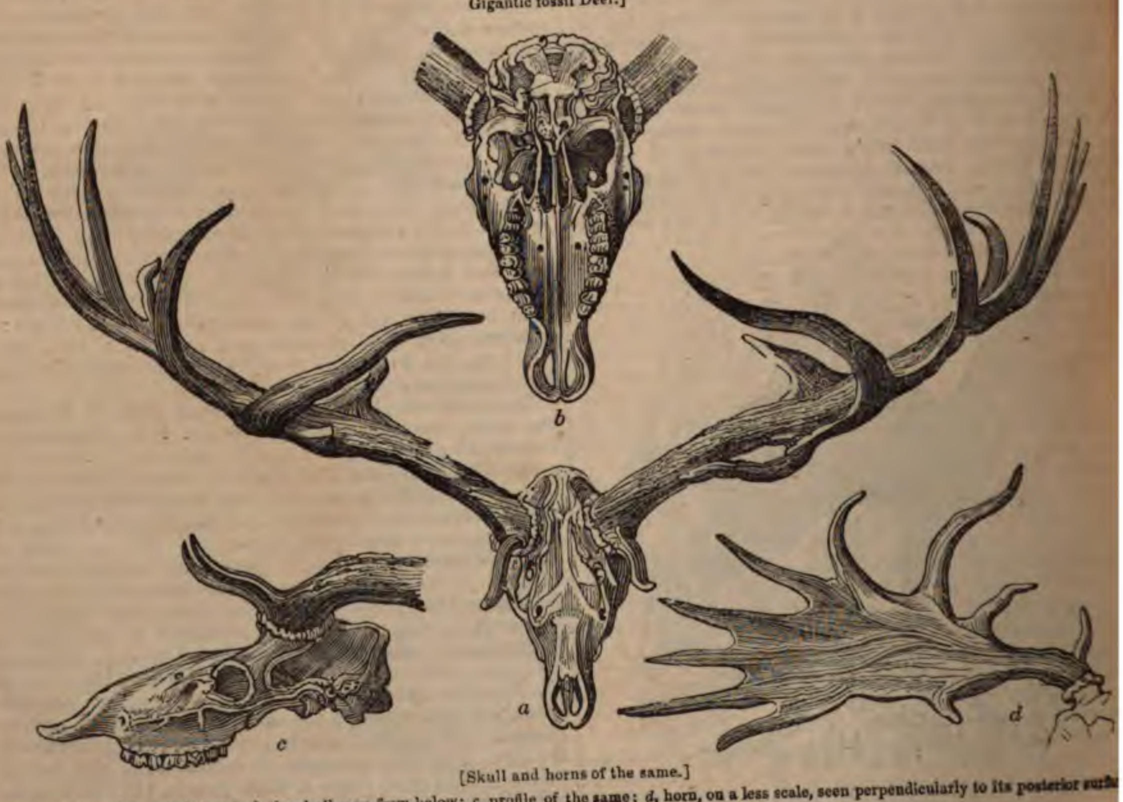
Our limits will only allow us to draw the attention of our readers to this subject, and to the subjoined illustrations of the gigantic fossil elk, or rather stag. The skeleton is taken from that in the collection at Edinburgh, communicated by Professor Jameson to Cuvier. It was found in the Isle of Man, in a marl full of fresh-water shells, at the depth of eighteen feet. The dimensions are 'six feet high, nine feet long, and in height, to the top of the right horn, nine feet seven inches and a half.'

The skull and horns are taken from Cuvier's figure of the noble specimen deposited in the Paris Museum by Colonel Thornton.

Captain Proby Cautley, F.G.S., in his paper 'On the Remains of Mammalia found in the Sewalik Mountains, at the southern foot of the Himalayas, between the Sutluj and the Ganges,' enumerates, among the fine collection of bones found by him, those of the elk, and several varieties of deer. In the district between the Jumna and the Ganges he obtained the remains of more species of deer than one in the marl or clay conglomerate, described as consisting of fragments of indurated clay, cemented by clay, sand, and carbonate of lime. Professor Kaup discovered the bones of the following deer, *Cervi anocerus*, *trigonocerus*, *dicranocerus*, and *curtocerus*, in the sand resting upon the calcaire grossier in Rhenish Hesse, in company with *Dinotherium*, &c. &c. Deer therefore may be considered to have existed in the second and third tertiary periods, viz. the Miocene and Pliocene periods of Lyell.



Gigantic fossil Deer.]



[Skull and horns of the same.]

a, front view of the whole head; *b*, the skull seen from below; *c*, profile of the same; *d*, horn, on a less scale, seen perpendicularly to its posterior surf

The remains of this extinct animal have been found in peat and marl in various parts of England and Ireland, in France, on the Rhine, in Silesia, and in Lombardy.

We have confined ourselves to a mere outline of this interesting and extensive family, and the student should consult for the species the works of G. and F. Cuvier, especially the 'Ossemens fossiles' of the former; of Mr. Hamilton Smith, in Griffith's Cuvier; of Lichtenstein (Saugethiere); and of Richardson (*Fauna Boreali-Americana*). He should also refer to the Proceedings of the Zoological Society of London; for, numerous as the species already are, new ones are daily occurring. Other works will occur to the learned, and we ought not to forget the Ruminantia, by Sir William Jardine (*Naturalist's Library*, 'Mammalia,' vol. iii., 1835), where much valuable information, ably illustrated, will be found.

DEFAMATION; the speaking slanderous words of another. The injured party may bring an action to recover damages, but to enable him to succeed, it is absolutely necessary that the words should contain an express imputation of some crime or misdemeanor which would make him liable to punishment; or, if the words are not actionable in themselves, some special damage should be proved to have resulted from them to the plaintiff. There are certain cases, however, where words are spoken of a tradesman or professional person in the way of his trade or profession, as that a tradesman is insolvent, or that an attorney deserves to be struck off the roll, in which the plaintiff, by reason of the character he fills, may recover damages. Of the first class a recent case affords an illustration. A churchwarden was accused by the defendant of having stolen one of the church bell-ropes: it was held that, as the property of the bell-ropes was vested in the churchwarden, the words did not impute a crime to the plaintiff for which he was punishable, and consequently that the action could not be maintained. In former times, actions for slander were very rare; and though it has been frequently said that actions for words spoken in heat or anger, suddenly and without deliberation, ought not to be encouraged, yet it has been truly observed (by Wray, Ch. Just.) that unless the party injured by false and malicious scandal had a remedy at law, it would lead to personal violence, and the consequences might be fatal. In most cases, malice in law may be inferred, but in actions for slander *primâ facie* excusable on account of the cause of publishing the slanderous matter, malice in fact must be proved; it is scarcely necessary to observe, that where special damage is proved, the existence of malice is immaterial. Defamation is also punishable in certain cases by indictment and criminal information. Where the slanderous matter is spoken of a peer, the offence is termed scandalum magnatum, and is made punishable by various statutes: this mode of proceeding however may be said to have become obsolete.

The ecclesiastical courts have power to punish for defamation relating simply to spiritual affairs; as an imputation that the complainant is a heretic: but these courts can only inflict punishment by way of penance; they cannot award damages. An action may also be maintained for slander of title to an estate or property; but in this case the plaintiff must prove malice express or implied: it is not sufficient that the defendant should allege title in himself, or make objections to the title of the plaintiff if he had reasonable grounds for so doing. (Cowel; M'Culloch; Selwyn, *N. P.*) [LIBEL; SLANDER.]

DEFEAZANCE (from the French verb défaire, to make void), is an instrument which defeats the force or operation of some other deed, estate, or interest, upon the performance of certain prescribed conditions. Defeazances are of two kinds, the one applicable to freehold estates; the other, to terms of years and executory estates, and to recognizances, bonds, and other executory interests. The former must be a collateral deed made at the same time with that to be defeated, and forming part of the same transaction. In this manner mortgages were formerly made, the mortgagor enfeoffing the mortgagee, and at the same time executing a deed of defeazance. Defeazances have been discountenanced by the courts, as affording opportunities for fraud, and they are now rarely used as applicable to titles, it being far better to make the conditions apparent on the deed itself. (See lord Talbot's *Remarks in Ca. Temp. Talb.*, p. 64.)

The latter kind of defeazances may be made either at the time of the original transaction, or at any subsequent period: it has been said that every defeazance must be made by deed: but other authorities have laid down that it need only be by means as high and solemn as the instrument to be defeated.

By the stat. 3 Geo. IV., cap. 39, defeazances to warrants of attorney and cognovits must be written upon the same paper or parchment as the instruments themselves. (Bl. *Com.*; Sheppard's *Touchstone*; Co. Litt.)

DEFERENT, a circle or oval curve on which the centre of another oval moves, while a planet is supposed to move round the latter. The term is one of the PTOLEMAIC HYPOTHESIS. Thus the earth's orbit, to choose an example out of the modern system, is a deferent on which the moon's orbit is carried. But to make this example perfectly represent the sense in which the word was used by Ptolemy, we must suppose the system of Tycho Brahé to be the real one, and a spectator in the sun assuming the Copernican system.

DEFFA'ND, MARIE DE VICHY, MARQUISE DU, daughter of Gaspard de Vichy, Count of Champ Rond, was born in 1696. She was brought up to figure in the world, according to the received expression; that is to say, to shine in the saloons of the capital. She had natural parts, wit, playfulness, and taste, which her education tended to stimulate, rather than to form her heart. In 1718 she married the Marquis du Deffand, a colonel, and afterwards general, in the French service. Having some time after separated from her husband, she had her own establishment, her parties, her admirers, and her petits soupers. She lived like many other ladies of rank and fashion of the times of the Regency and of Louis XV., and her correspondence throws much light on the manners of that age. She numbered among her friends and correspondents some of the most distinguished men of France, such as President Hénault, Montesquieu, Marmontel, D'Alembert, Voltaire, &c. After the death of her husband, in 1750, in order to accommodate herself to her reduced income, she gave up her establishment, and took apartments in the external or extra-claustral part of the Convent of St. Joseph, in the Rue St. Dominique, where she spent the remaining thirty years of her life. She continued, however, her evening parties, which were in great repute for wit, pleasantry, and bon ton, and to which most foreigners of distinction who resorted to Paris were introduced. Being afflicted with blindness, she took as a companion and reader an unprotected young person, Mlle. de l'Espinasse; but she afterwards became jealous of her, and they parted; on which occasion Madame du Deffand quarrelled with D'Alembert also. She continued, though blind, to correspond with her friends, and especially with Voltaire and Horace Walpole, to a very advanced age. She died at St. Joseph, in September, 1780, in her 84th year. Madame du Deffand possessed some very valuable qualities: she had real wit and taste without affectation, and much tact and sound judgment whenever caprice or prejudice did not lead her astray. She had a quick perception of merit of every kind, and her house was always open to it: she had a horror of dogmatism, exaggeration, and pedantry: although a free-thinker, she never partook of that absurd fanaticism against religion which characterized some of the philosophic writers of the eighteenth century. Her judgment was too calm and sober not to perceive the inconsistency of philosophical intolerance; she even gave some good advice to Voltaire on this subject, and was one of the very few who spoke frankly to him. In her correspondence with Walpole she judges Voltaire rather severely. 'Correspondance de Madame du Deffand avec M. Walpole de 1766 à 1780, suivie de ses Lettres à M. de Voltaire de 1759 à 1775,' 4 vols. 8vo., Paris, 1810; and also 'Correspondance inédite de Madame du Deffand avec D'Alembert, Montesquieu, le Président Hénault, &c., suivie des Lettres de M. de Voltaire à Madame du Deffand,' 2 vols. 8vo., Paris, 1809, with a biographical notice.

DEFILADING, is that part of fortification the object of which is to determine (when the intended work would be commanded by eminences within the range of fire-arms), the directions or heights of the lines of rampart or parapet, so that the interior of the work may not be incommoded by a fire directed to it from such eminences.

If it be required, with a given height of parapet, to approach obliquely as near as possible to an eminence, the following process is adopted, the situation of the rampart or parapet at that extremity of the intended line which is farthest from the eminence being also given. A line is supposed to be drawn from the commanding eminence, or rather from a point about eight feet above it, through another point which represents the crest or summit of the intended parapet at the given place, and to be continued till it intersects the natural ground in rear of that part of the line of parapet. This crest is considered as the vertex of a cone whose base is a circle, on the ground, having for its radius a line equal to the distance from the parapet to the rear extremity of the ground to be protected (which distance, however, must always be less than that of the intersection above mentioned). Then a line being drawn on the plan, from the point vertically under the given crest, parallel to a line drawn from the said intersection and touching the circle, will be the direction of the intended rampart or parapet, whose height must be everywhere equal to that which was given. By this construction all the lines of fire from the commanding eminence, and passing closely over the crest of the parapet, will be in a plane meeting the ground on that eminence, and touching the convex surface of the cone.

Again, if it be required, when the plan of the work is determined, to ascertain the heights of a rampart or parapet in different places, so that the interior may be protected from the fire of the enemy on a commanding eminence beyond, the relative heights of the principal inequalities of the ground with respect to some horizontal plane, technically called the plane of comparison, (which generally passes through the highest or the lowest point) must be found by the spirit level. An oblique plane, technically called the plane of site, must be imagined to touch the summit of the eminence in front, to pass above all the intermediate ground, and to meet that in rear of the work; then the relative heights, with respect to the plane of comparison, of the several points in the plane of site which are vertically above the inequalities before mentioned of the natural ground, must be computed, and the differences (which express the heights of the plane of site above the natural ground in such places) being added to the given height which the rampart or parapet is to have above the plane of site, the sums will express the heights to which the works are to be raised above the natural ground at the same places.

When the work is of small importance, the elevations of the parapets above the ground are generally determined by the eye—thus:—Pickets are planted in convenient places, chiefly at the angles of the intended work (the plan of which has been already traced on the ground,) and on the summit of the commanding eminence, the picket in this place being about eight feet high. The visual rays being supposed to proceed from the top of this picket to two or more points, which must be also eight feet above the ground, in rear of the work, the intersections of these rays with the pickets planted on the magistral or ground line of the work, will show the heights to which the parapet is to be raised at those places in order that the interior may be effectually protected.

A similar process is employed when it is required to protect the defenders of any parapet from the fire of the enemy on a commanding eminence in their rear; in which case it is frequently necessary to raise, in the interior of the work, a mass of earth, which is called a traverse or a parados, according to its situation.

DEFILE, in military writings, is a name given to any narrow way. Every piece of ground which, in consequence of local impediments, can be passed by a column only on a narrow front, is called a defile. Such are roads along valleys, between walls or hedges, or over dykes raised across marshes. Sometimes also the term is applied to a street in a village, and to the path over a small bridge.

DEFINITION (*definire*, to mark out a boundary,) is the process of stating the exact meaning of a word, by means of other words. From so boundless a subject, we can only select a very few points, such as have reference to the most common uses of the term. In the first place, it is evident that all definition contains a species of fallacy, if considered as an absolute determination of the meaning of words. *Quis custodiet ipsos custodes?* who shall determine the meaning of the words which make up the definition? The process of definition can never appear satisfactory unless it be considered as a transition from many words to the single term which it is agreed shall stand for their meaning, be that what it may. All attempts at absolute definition must end in confusion of ideas.

But at least, perhaps it may be said, the mathematical sciences are founded upon exactness of definition. Nothing is more common than this assertion coupled with another, namely, that these sciences depend entirely upon definitions. In a certain sense both are true, but that sense is not the most frequent meaning of them. The exactness of mathematical definition is not of arbitrary construction, but a consequence of the exactness of the notions which all men have, or may be made to have, upon the things which the words represent. There is no exactness in the fundamental definitions of mathematics, verbally considered, but only much confusion arising from the attempt to introduce conventional accuracy. The words 'straight line' carry with them their own meaning, and even explain the attempt which is made to explain them; for no one would easily guess what sort of line it is which 'lies evenly between its extreme points,' unless he were aware that it is a 'straight' line which these words attempt to describe.

Definition may be purely nominal, or it may be such a description of the thing defined as amounts to a statement of some one of its fundamental properties. The first we see in the words 'isosceles triangle,' the definition of which is a simple annunciation that we intend to use a Greek term. The second may be seen in the article CONCAVE AND CONVEX, in which the definition is made by means of an absolute mathematical property of the thing defined: the relative position of the spectator, the curve in question, and a straight line, do not enter into the notion which the words immediately suggest. The method of Euclid is to supply a rough and descriptive definition addressed to the common notion of the word, followed by an assumption of a mathematical property under the shape of an axiom. Thus a straight line is 'that which lies evenly between its extreme points;' while the real definition, or distinction between straightness and the contrary is contained in the axiom 'two straight lines cannot enclose a space.' Every attempt at mathematical definition, which does not rest upon the selection of a substantive property of the thing defined, to be the test of its existence, is either the mere substitution of words for words, or an attempt to make that mere substitution effect something more than lies in it to perform.

The conditions of a good definition are, 1, perfect axiomatic evidence that the property which is made the distinguishing test belongs to the object intended to be defined, and to nothing else; 2, entire separation of the part of the property, if any, which admits of being demonstrably connected with the notion defined, from that which contains the assumption; 3, the introduction of the definition in the proper place, namely, when the necessity for a new verbal representation has begun to appear.

DEFLAGRATION is a term employed to denote the sparkling combustion of substances without violent explosion: thus when nitre and sulphuret of antimony are mixed and ignited or thrown into a hot crucible, the combustion which occurs is of the kind termed deflagration.

DEFLECTION. A term applied to the distance by which a curve departs from another curve, or from a straight line; and also to any effect either of curvature or of discontinuous change of direction. It is used where any 'bending off' takes place, which is in fact the etymological meaning of the word.

DE FOE, DANIEL, the son of James Foe, a butcher in the parish of St. Giles, was born in London, in 1661. Of his youthful years we have nothing particular to relate. His father, who was a dissenter, sent him to a dissenting academy at Newington Green, where he remained four years. As the only education he received was at this time, we may conclude that he applied with considerable advantage. Different reasons have been assigned for his prefixing 'De' to the family name of Foe: the true cause of his doing so was probably a desire to conceal the lowness of his origin, and a belief that this addition would effect the object. De Foe first appeared as an author in 1683, when he published a political pamphlet on the war that was then carried on between the Austrians and the Turks. Two years afterwards, his aversion to James the Second and his government and his zeal for the maintenance of Protestantism induced him to enlist under the duke of Monmouth, whose rash and ill-concerted conspiracy was the cause of so many executions. Our author had the good fortune to escape the fate that numbers of his companions suffered. De Foe had for some years been engaged in trade, first as a hose-factor and wool-dealer (in the prosecution of which latter branch of his business he is said by Wilson, in his 'Life and Times of De Foe,' to have made more than one voyage to Spain); he afterwards established, on the banks of the Thames, in the neighbourhood of Tilbury Fort, a manufactory of brick and pan-tiles, which, until then, had always been imported from Holland. The introduction of this manufacture was doubtless a considerable benefit to this country. De Foe, however, did not profit by it: his lively imagination, his ardent temper, his eager interest in politics, and fondness for literature, disqualified him for commercial matters. His circumstances became involved, and a commission of bankruptcy was taken out against him: his creditors, however, for whose payment he made the most honourable exertions, were all ultimately satisfied.

In January, 1687-8, he was admitted a freeman of the city of London; and in 1695 was appointed accountant to the commissioners for managing the duties on glass; a short-lived occupation, which he unfortunately lost in 1699, when the tax was suppressed. In the beginning of 1700 he published the 'True-born Englishman,' a pamphlet in answer to a libel on King William, which had been written by Tutchin. This defence pleased the king, who not only admitted the author to an audience, but bestowed on him the more substantial reward of a present of money. From the good-will that the king appeared to bear him, he had hopes of again obtaining some public employment; but these expectations were soon destroyed by the death of the king and the accession of Queen Anne. In the new reign he could expect no favours from the government; he had always been obnoxious to the house of Stuart and its adherents. This source of profit then being dried up, without much chance of its re-opening, he betook himself diligently to his pen, to which alone he could safely trust for his subsistence. He wrote with unwearied assiduity: but the loss of his patron, the king, was soon severely felt. By an ironical pamphlet, called 'The shortest Way with the Dissenters,' he gave bitter offence to many powerful bodies in the state. The high-church party resented it as a libel, and offered a reward for the apprehension of the author. The House of Commons (February 25, 1702-3) angrily resolved that this scandalous book should be burnt by the common hangman; and the secretary of state issued the following proclamation:—'Whereas Daniel De Foe, alias De Fooe, is charged with writing a scandalous and seditious pamphlet, entitled "The shortest Way with the Dissenters." He is a middle-sized spare man, about forty years old, of a brown complexion, and dark-brown coloured hair, but wears a wig: a hooked nose, a sharp chin, grey eyes, and a large mole near his mouth. Whoever shall discover the said Daniel De Foe to one of her Majesty's principal secretaries of state, or any of her Majesty's justices of peace, so as he may be apprehended, shall have a reward of 50*l.*: to be paid upon such discovery.' He was shortly after caught, fined, pilloried, and imprisoned. 'Thus,' says he, 'was I a second time ruined; for by this affair I lost above 3500*l.*' (Ballantyne's Mem. of De Foe, in Sir W. Scott's Prose Works, vol. iv.) During the time that he was confined in Newgate he wrote an ode to the pillory, and matured a scheme for 'The Review,' a paper exclusively written by himself, which for more than nine years he continued to publish twice or three times a week. After he had been a prisoner for more than a year, Harley, who was then secretary of state, interceded with the queen for his release, who at once sent money to his wife, who was in great distress, and, after some delay, paid his fine and set him at liberty. De Foe, once more free, took a house at Bury St. Edmunds, whither he removed with his wife and children, and recommenced his literary labours. The renewal of his former pursuits was attentively watched by his numerous enemies. It is stated that fictitious suits were now commenced against him, and that a scheme was projected to apprehend him as a vagabond while he was on a journey to Exeter, and to kidnap him for a soldier. In 1706 De Foe was recommended by Lord Godolphin to the queen as a fit and proper person to send to Scotland to promote the Union. This business being entrusted to him, he resided in Edinburgh until the end of 1707, when, returning to London, he wrote an account of the subject with which he had been engaged. For his services during this mission the queen granted him a pension, which political changes not long permitting him to enjoy, he was again compelled to gain his livelihood by writing. The attacks in his political pamphlets now, a second time, got him into difficulties; for two papers, one entitled 'What if the Queen should die?' the other called 'What if the Pretender should come?' he was fined 800*l.*, and, in default of payment, again committed to Newgate. His second was not so long as his first imprisonment; he was liberated by the queen in November, 1713.

After the death of Anne in 1714, his enemies so assailed him from every quarter, that he was compelled in self-defence to draw up an account of his political conduct, and of the sufferings he had endured. The continual attacks of his opponents so weighed upon his mind and depressed his spirits, that his health gave way, and an illness was brought on which terminated in an apoplectic fit. When he recovered, he continued to write, but thought it prudent to desert his old field of political satire and invective, and to enter upon a new one. To afford entertainment by tales of fiction was his present task, and he now put forth the first part of his inimitable 'Adventures of Robinson Crusoe,' which no story has ever exceeded in popularity. The merits of this work have been disparaged on account of its want of originality: 'but really the story of Selkirk, which had been published a few years before, appears to have furnished our author with so little beyond the bare idea of a man living on an uninhabited island, that it seems quite immaterial whether he took his hint from that or any other similar story.' (Walter Scott, *Prose Works*, vol. iv., p. 245.) The great success and profits arising from the first induced him to write a second and third part, each of which had less merit than its predecessor, the last being a mere book-making job. We have not space to enumerate the multitude of pamphlets and books which our author published. 'The Adventures of Captain Singleton,' 'The Fortunes of Moll Flanders,' 'The History of Colonel Jack,' 'The Fortunate Mistress,' 'The Memoirs of a Cavalier,' and 'The History of the Plague,' which were among the most popular of his works that succeeded 'Robinson Crusoe,' form only a small portion of his writings. His biographers, Chalmers and Wilson, have published catalogues of the writings of De Foe, but it is very probable that they are incomplete, and that many of his works which were only of a temporary interest have been lost.

De Foe died at the age of seventy, on the 24th of April, 1731 in the parish of St. Giles's, Cripplegate. He left a widow and several children, among whom was Norton De Foe, the author of 'Memoirs of the Princes of the House of Orange,' who is thus satirised in Pope's Dunciad:—

'Norton from Daniel and Ostræa sprung,
Bless'd with his father's front and mother's tongue.'

Sophia, the youngest daughter of Daniel De Foe, published two treatises on the Microscope. She married Henry Baker, a man of considerable learning.

De Foe's powers as a writer are of no ordinary stamp: we speak of his prose works; for his poetry, which scarcely deserves the name, is as such of no value whatsoever.

If he had been in affluent circumstances we have every reason to suppose that he would have written less, and that necessity alone made him a book-maker, and drove him continually to the printing-press. The disputes of the time afforded an inexhaustible fund of topics, and the violence of party spirit was displayed by all factions in pamphlets, which were the weapons of political warfare. To this style of writing De Foe had two reasons for applying himself; first, because it was the surest to meet with a ready sale, and to bring him in a pecuniary return; and secondly, because he was himself an eager politician. As a Whig, he opposed the House of Stuart; as a Protestant, he wrote against Catholicism; and as a dissenter, against the church. His attention, however, was not confined to the hackneyed topics of the succession and the church: he treated of finance, trade, and bankruptcy, as well as of the union with Scotland; and all this, independently of his Review, which contained articles on foreign and domestic intelligence, politics, and commerce. 'The fertility of De Foe,' says Sir Walter Scott, 'was astonishing. He wrote on all occasions, and on all subjects, and seemingly had little time for preparation on the subject in hand, but treated it from the stores which his memory retained of early reading, and such hints as he had caught up in society, not one of which seems to have been lost upon him.' (*Prose Works*, vol. iv., p. 247.) Of his Review, we believe no complete copy is in existence: however great was the interest that it excited during the time of its publication, it did not long survive its author. But it is not for the class of writings that we have been speaking of, although they were of undoubted ability, that De Foe chiefly is and will continue to be celebrated; it is by his popular narratives that his great fame has been obtained. Of these we may reckon three kinds:—1st. The account of remarkable occurrences, as the Journal of the Plague Year, and the Memoirs of a Cavalier; 2nd. The account of mariners, privateers, thieves, swindlers, and robbers, as Robinson Crusoe, the piracies of Captain Singleton, the histories of Colonel Jack, Moll Flanders, and Roxana; 3rd. The descriptions of supernatural appearances, as the Life of Duncan Campbell, a Treatise on Spirits and Apparitions, the very degenerate third part of Robinson Crusoe, and the Apparition of Mrs. Veal.[*] The accuracy of De Foe's nautical knowledge may be attributed both to his residence in Limehouse, a district frequented by sailors, and to his intimacy with Dampier. His acquaintance with low life and the tricks of swindlers and prostitutes must have been gained during his imprisonments. His style is inelegant, but simple and expressive. The remarkable quality of his writings is, the appearance of reality that is given to fiction. By a particularity and minuteness of description which his skill prevents from being tedious, he increases the probability of his story, adds to its interest, and carries forward his reader. No author of imaginary tales has impressed so many persons with the belief that they have been reading a true rather than a fictitious narrative.

DEGREE OF LATITUDE, LONGITUDE, &c., and DEGREE OF THE MERIDIAN. [GEODESY.]

DEGREE OF ANGULAR MEASURE. [ANGLE.]

DEGREE OF AN EQUATION. The degree of an algebraical term is the number of letters which enter into it as factors. Thus x^3y^2 is absolutely of the fifth degree, but of the second degree with respect to x, and of the third with respect to y. The degree of an equation is the degree of its highest term.

DEGREE. [ARTS; UNIVERSITY.]

DEIFICATION. [APOTHEOSIS; CONSECRATION.]

DEIOTARUS, a tetrarch or prince of Galatia, or Gallo-Græcia, was the ally of Rome in the wars against Mithridates, for which he was rewarded by the grant of part of Pontus and Little Armenia, with the title of king given to him by the Roman senate. Cicero, during his government of Cilicia, became acquainted with him, and received assistance from him against the Parthians. In the civil war between Cæsar and Pompey, Deiotarus took part with the latter, and was in consequence deprived by Cæsar of part of his dominions. After Cæsar's return from Spain, Deiotarus was accused by his own grandson, Castor, of having attempted to assassinate Cæsar, while the latter was in Asia. Cicero pleaded before Cæsar in favour of his old friend ('Oratio pro Rege Deiotaro.') After Cæsar's death, Deiotarus recovered possession of his territories; he took part with Brutus against the triumvirs, but afterwards made his peace with the latter, and subsequently favoured Octavius against Anthony in his final struggle for the empire. Deiotarus was then very old, but the precise time of his death is not known. According to Dion (lib. 48), his grandson, Castor, succeeded to his dominions in Gallo-Græcia; according to others, he was succeeded by Amyntas.

[Coin of Deiotarus.]

British Museum. Actual Size. Copper. Weight, 170 grains.

DEIRA, one of the two kingdoms into which that of Northumberland was divided in the infancy of the Saxon government. Deira, whose capital was York, comprehended the country between the Humber and the Tyne. Bernicia, the other division of the kingdom of Northumberland, had its capital at Bamburgh, and comprehended the territory between the Tyne and the Forth. But historians differ greatly in their accounts of the precise limits of these two divisions. Archbishop Usher, in his *Britannicarum Ecclesiarum Antiquitates*, fol., Lond., 1687, p. 212, discusses the different statements of Alured of Beverley, Malmesbury, and other writers, concerning them. The kings of Deira were Alla, or Ælla, 559; Osric, 633; Oswin, 644; Adelwalt, or Ethelwald, 652; Alfred, about 660. The two kingdoms of Deira and Bernicia were united and separated several times during the period comprehended within these dates. Under Edfrid, in 670, they were again and finally united as the kingdom of Northumberland, and so continued till Andred, or Eanred, in 810, submitted to the dominion of Egbert, king of Wessex, by whom the Saxon heptarchy is considered to have been extinguished. (Camd., *Brit.* edit. Gough, 1789, iii., 1, 68, 75; Henry, *Hist. Brit.*, 4to., Edinb., 1774, ii., 221; Rapin, *Hist. Eng.*, fol., 1732, i., 47 and seq.)

DEISM properly means belief in the existence of a God, but is generally applied to all such belief as goes no farther, that is to say, to disbelief of revelation. It is always applied dyslogistically, and frequently merely as a term of reproach. But the identical word, in its Greek form, *theist*, is not a word of disapprobation, and, consistently with established usage, may be appropriately applied as opposed to atheist, when the latter term is correctly used. For it must be observed that the term atheist has been not unfrequently employed in the sense of an unbeliever in Christianity, though at the same time professing theism.

DELAMBRE, JEAN BAPTISTE JOSEPH, was born at Amiens, Sept. 19, 1749. His course of study was at the gymnasium of his native town. His excellent disposition, great perseverance, and extraordinary memory, early attracted the notice of his teacher in the college, the poet l'Abbé Delisle; and the friendship commenced between Delisle and Delambre, while they stood in the relation of preceptor and pupil, was continued unabated during the remaining part of the poet's life; and Delambre used to express his obligations to that eminent man with great feeling to the latest period of his life.

Delambre was desirous of pursuing his studies in Paris, but his pecuniary means were inadequate to the expenses in which he would be necessarily involved by such a course. The influence of Delisle however procured for him an exhibition to one of the colleges which was in the gift of his native town, and which it has been commonly said was first founded by one of Delambre's own family. The time during which he was entitled to hold it having expired, and his family being unable to furnish him the requisite assistance to prolong the period of his studies, he was compelled to adopt some means of supporting himself. After more than a year of disappointment, indecision, and privation, he undertook the occupation of translating foreign works into French; and many such translations from the Latin, Greek, Italian, and English writers were executed by him during the first fifteen years after he left college. In addition to this employment, he gave lessons in languages to private pupils; and, by the combined emoluments of these labours, he was not only able to supply his small personal wants, but to make an excellent collection of the best authors in the several languages which he studied.

The parsimonious views of parents on the subject of education have been witnessed by every one whose life has been devoted to instruction, under circumstances similar to those of Delambre. Their continual importunity to men eminent in some one pursuit, whom they have employed, to undertake others with which they have little or no acquaintance, and this for the sake of diminishing the expense of education, is proverbial. It was this continual application to Delambre, who was distinguished both in the philological and philosophical departments of language, to teach mathematics, which induced him, at the age of twenty-five, to enter upon the study of the exact sciences. Most men would have been soon wearied of a pursuit so undertaken; and this would have been the case with Delambre, had his mental discipline been merely that of exercising the memory, which is unfortunately too much the tendency of the exclusive study of languages. Order and perseverance were distinguishing characters of Delambre's mind; and having, from professional motives, entered on the study of mathematics, and thereby become attached to their pursuit, he determined to pursue a regular course of study in these sciences. He entered the astronomical class of the College of France under Lalande, but not till he had carefully read the works of his master, and made many notes upon them, amounting almost to a commentary.

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[*] For an account of this very ingenious composition and its complete success, we refer our readers to Sir Walter Scott's interesting biography of De Foe, with which the whole history of the Apparition has been reprinted.

On one occasion, shortly after he joined the class, a passage from Aratus was required, which Delambre instantly supplied from memory. Lalande, ever alive to the importance of astronomical history, was immediately interested in Delambre; and it is probable that to this circumstance much of the future fame and labours of Delambre are to be attributed, as Lalande became immediately his friend, and henceforth considered Delambre as his fellow-labourer. Many of the most complicated calculations of Lalande were actually performed by Delambre; but though our author probably entered upon much of this drudgery for pecuniary considerations, he has given ample proof that the labour was far from a disagreeable one to him, by the tables which he himself subsequently published in later life.

During a short residence at Compiègne, which he made while he was a professed teacher of languages, he appears to have paid some attention to plane astronomy; and when he formed a friendship with Lalande, M. Dassy, in whose family Delambre was domiciled as tutor to his sons, was prevailed on by the astronomer to fit up a small observatory for his use. In this Delambre acquired some skill in the manipulation of his instruments, and also in the management of the formulæ which are used in the particular classes of data that the structure of instruments enables us to obtain. He then determined to devote his life to astronomy, and its history. The learning requisite for the history of astronomy he had already obtained, though he had probably at this time read comparatively few of the books, and none of the manuscripts, which so arduous a task entailed upon him; whilst of the incessant labour required by the study of astronomy as a science he had possibly little idea, and of the skill which his future practice gave him his share was also very small. His ardour and perseverance, however, surmounted all the obstacles that opposed his progress; and never did any man more completely illustrate the trite proverb, *labor omnia vincit*, than Delambre.

When in 1781 the discovery of the planet Herschel was exciting the deep attention of astronomers, Delambre undertook the formation of tables of its motion, being probably urged to this by the Academy of Sciences having proposed the determination of its orbit as the prize of the year. That prize was awarded to Delambre. He then undertook the construction of his solar tables, as well as tables of the motions of Jupiter and Saturn. Shortly afterwards he commenced his tables of the eclipses of Jupiter, which occupied him some years. When, at a sitting of the Academy, Laplace communicated to that body the results of his researches on the inequalities of Jupiter and Saturn, he determined on constructing complete tables of the motions of those two planets, founded on those results, but more especially of those of Jupiter. The utility of such tables to the navigator was a strong inducement to this undertaking, which he entered upon with great ardour, and completed in an almost incredibly short period, when we consider the great labour which they involved. His ecliptical tables were presented to the Academy in 1792, as a competing paper for the prize on that subject which had been offered the preceding year; but he had been for several years engaged in their calculation. It is indeed very probable that the prize was offered to induce him to complete them, as it was well known that he was engaged in the preparation of such tables. Such, indeed, is well known to be the general practice of that body; and though it has occasionally done good, in bringing to a completion researches that might not so soon have been completed, it does this mischief,—that it almost cuts off all competition, and inevitably gives the prize to a single candidate, by allowing him the advantage of a long previous preparation for it. We cannot disapprove of the adjudication on this occasion, as Delambre's labours well merited the distinction; but we do not think the general practice calculated on the whole to do other than give *éclat* to the members of the Institute themselves or their immediate friends.

When the project of fixing a standard of length was acceded to by the governments of France and England, Delambre and Méchain were appointed to carry it into execution on the part of the former government, by measuring the arc from Dunkirk to Barcelona. This laborious undertaking was carried on during the horrors of the French Revolution, amidst almost every variety of difficulty and personal danger that can be conceived. Méchain dying during the progress of the work, the completion of it devolved wholly on Delambre. His perseverance, prudence, and zeal, however, eventually overcame all obstacles; and after eight years of unceasing labour and anxiety, he obtained the measurements which constitute the data of the three volumes (1806-10) of his elaborate and invaluable work, *Base du Système Métrique Décimal.* The Institute of France, who had watched over its progress, decreed him the prize for the most valuable work on physical science which had appeared within the preceding ten years; and it is difficult to conceive that a single objection could possibly arise to the propriety of that decision.

Of the continuation of Delambre's arc by Biot and Arago from Barcelona to Formentera, this is not the place to speak at length; but it may be necessary to state that discrepancies which had long been observed in this latter arc have been recently found by Puissant to arise out of actual errors committed by these observers.

Delambre was chosen an associate of almost every learned body in Europe, and was appointed by the French government a member of the Bureau des Longitudes, and Sécretaire Perpetuel de l'Institut de France, and one of the directors of the University of France. During the twenty years that he filled this latter important and responsible post, his attention to its duties was unwavering, and his decisions remarkable for their justice and impartiality. His *éloges* of the deceased savans were indeed at the time considered somewhat strained as to praise; but they were at least kindly meant to the friends of the deceased, and were gratifying to the vanity of the nation. They were remarkable for purity of style and for the researches into the history of the subjects to which the elogized member had devoted himself.

In 1814 Delambre was appointed a member of the council of Public Instruction, but was deprived of it in the following year. He was in Paris when it was taken by the allied armies; and shortly afterwards, writing to one of his friends, he says he worked with perfect tranquillity from eight in the morning till midnight in the continued hearing of the cannonade. Such self-possession for study under that tremendous attack, and such absence of interest in the result of the great struggle, to say nothing of indifference to personal danger, is what we confess ourselves unable to understand. In the midst of active exertion we may be fearless of personal danger; but Delambre was in his study, and professes to have felt not only perfectly calm, but to have been able to pursue his scientific labours for sixteen hours in the very midst of the cannonade. He escaped uninjured.

On the creation of the Legion of Honour, Delambre was constituted a member of that body; and soon after an hereditary chevalier, with a pension, as a reward for his scientific services; and finally, in 1821, he was created an officer of that body. In 1817 he was created a chevalier of the order of St. Michael.

The death of Delambre occurred in 1822, at the age of seventy-two. It was preceded by a total loss of strength and frequent and long-continued fainting fits, with the other symptoms of a constitution worn out by hard mental and bodily labour. He died as he had lived, calmly, and though not without great suffering, yet without a single complaint.

The writings of Delambre are exceedingly numerous. The following is a list of his separate works in the order of their publication:—

1. Tables de Jupiter et de Saturne, 1789.
2. Tables du Soleil, de Jupiter, de Saturne, d'Uranus, et des Satellites de Jupiter, pour servir à la 3me edition de l'Astronomie de Lalande, 1792.
3. Méthodes Analytiques pour la détermination d'un Arc du Méridien, 1799.
4. Tables Trigométriques Décimales, par Borda, revues, augmentées, et publiées par M. Delambre, 1801.
5. Tables du Soleil, publiées par le Bureau des Longitudes, 1806.
6. Base du Système Métrique Décimal, 3 vols., 1806-10.
7. Rapport Historique sur les Progrès des Sciences Mathématiques depuis 1789. 1810.
8. Abrégé d'Astronomie, ou Leçons Elémentaires d'Astronomie Théorique et Pratique.
9. Astronomie Théorique et Pratique, 4to., 3 vols., 1814.
10. Tables Ecliptiques des Satellites de Jupiter, 1817.
11. Histoire de l'Astronomie Ancienne, 2 vols., 4to., 1817.
12. Histoire de l'Astronomie du Moyen Age, 1 vol., 4to., 1819.

13. Histoire de l'Astronomie Moderne, 2 vols., 4to., 1821.

14. Histoire de l'Astronomie au Dix-huitième Siècle, 1 vol. 4to., 1827, published under the care of Matthieu, and another promised, but not yet, that we are aware, published.

Besides these separate works, Delambre published a considerable number of memoirs in the collections of Petersburg, Turin, Stockholm, and Berlin, independently of those which appeared in the Mémoirs de l'Institut de France. Also twenty-eight memoirs on different subjects, astronomy, geodesy, and astronomical history, in the *Connaissance des Temps* from 1788 to 1820. A list of these may be seen in Coste's indexes to that work for 1807 and 1822.

Any attempt to analyze the writings of Delambre would far exceed the limits which can be allowed in this Cyclopædia. It is sufficient to say they are well worthy of the praise which has been bestowed upon them, as they are not only all excellent in their kind, but throughout marked with an original mind, indicate the most devoted enthusiasm to their several subjects, and prove that their author combined the spirit of scientific inquiry with the feelings and habits of literature in a degree that the history of a single individual has hardly ever before or since exhibited.

DELAWARE, a river in the United States, rises in the State of New York, between 42° and 42° 30′ N. lat., and afterwards forms the boundary-line between New York and New Jersey on one side, and Pennsylvania and Delaware on the other side. It terminates its course of 305 miles about five miles below Newcastle in Delaware, about 39° 30′ N. lat., and 75° 40′ W. long.

The Delaware is formed by two branches, the northern, called the Oquago, the southern, the Papachton, both rising on the western declivity of the Catskill Mountains, at an elevation of at least 1500 feet above the sea, and hardly 30 miles from the tide-water in the Hudson river. Both branches flow in a west-south-west direction for about 50 miles, and unite on the boundary of Pennsylvania, the Oquago turning suddenly to the south-east. In the same direction the river, which is now called Delaware, continues about 60 miles to the junction of the Neversink river. Hence it runs in a south-western and southern direction to the junction of the Lehigh at Easton, 65 miles, where it again turns to the south-east. After a course of 35 miles in that direction to Bordentown, it resumes its south-western course to the place where it enters Delaware Bay, five miles below Newcastle. The tide ascends in this river 120 miles from its mouth to the rapids at Trenton. The frequent changes in its course are caused by four ridges of the Appalachian Mountains, through which the river breaks in an oblique line. Though in its course above Trenton it forms numerous rapids, no cataracts, in the true sense of that term, interrupt the navigation of this river, which at seasons of high water extends by both branches into the State of New York. Ships of the line may ascend to Philadelphia, where the tide rises five or six feet, and sloops as far as Trenton.

The importance of this river has of late been greatly increased by the discovery of extensive coal-beds near the sources of its two largest tributaries, the Lehigh and Schuylkill. The Lehigh joins the Delaware at Easton, and the Schuylkill five miles below Philadelphia. Though both these rivers, whose sources are between 1400 and 1500 feet above the sea, and whose course does not exceed 100 miles, are extremely rapid, a great portion of their course has been rendered navigable by dams and locks, so that the produce of the coal-mines can be brought down to Philadelphia.

The navigation of the Delaware river is united to that of Chesapeake Bay by the Chesapeake and Delaware Canal, which traverses the north-eastern angle of Maryland and the northern district of Delaware, and connects the Elk river with the Delaware, 45 miles below Philadelphia. This canal, which is fourteen miles long, is navigable for small sea vessels. Its profits have never been sufficient to repay the heavy expense of its construction, and have been further diminished by the rail-road from Newcastle in the State of Delaware to Frenchtown in Maryland. By the Union Canal the Schuylkill navigation is connected with that of the Susquehanna. On the east a canal unites the Delaware at Trenton with Amboy Bay, and consequently with the city of New York; another canal is to begin opposite the mouth of the Lehigh, to traverse the northern districts of New Jersey, and to terminate near the city of New York; and the Lehigh canal connects the Delaware with the coal mines of Mauch Chunk on the Lehigh. (Darby; *Maps of the Society for promoting Useful Knowledge.*)

DELAWARE BAY extends in a north-west direction, between 39° and 39° 30′ N. lat., and 74° 50′ and 75° 40′ W. long. Its entrance between Cape May in New Jersey and Cape Henlopen in Delaware is from 15 to 16 miles wide. It afterwards grows wider, forming on the east a wide open bay between Cape May and Egg Island: it then gradually narrows, and is considered to terminate five miles below Newcastle, at the embouchure of the river Delaware. Its whole length is about 56 miles. Its low and sandy shores are without harbours even for small vessels.

DELAWARE, the second smallest state of the United States of North America, extends from 38° 27′ to 39° 50′ N. lat., between 75° 10′ and 75° 40′ W. long. It comprehends the north-eastern portion of the peninsula which lies to the east of Chesapeak Bay, and more than one-third of its surface, having an area of 2100 square miles, or somewhat more than the county of Norfolk.

The watershed of the peninsula runs nearly through its middle, along the western boundary-line of Delaware, but rather within it. In its northern portion Delaware is undulating, but perhaps it nowhere rises more than 100 feet above high-water mark; it gradually becomes more flat towards the Atlantic Ocean. Farther south it is an extensive flat, from which the small rivers ooze rather than flow to the Chesapeak Bay and the Atlantic. Some districts of the country towards the sea are marshy, and subject to inundations. At the southern extremity is the Cypress Swamp, six miles from east to west, and twelve miles from north to south, covered with trees, and containing about 50,000 acres: a part of it belongs to Maryland. The coast is low and sandy, and has no harbour except at the northern extremity along the banks of the river Delaware. Rehoboth Bay, formed by a long and narrow strip of sand, is too shallow to admit even small vessels. A breakwater is now constructing by the general government within Cape Henlopen, which is expected to form a good harbour. It is two-thirds of a mile in length, and twenty-two feet wide at the top. A dike half the length of the breakwater, and parallel to it, will protect it against the ice brought down the river.

The soil is in some places excellent, especially in the northern districts, but it is generally thin and sandy, though everywhere carefully cultivated. The principal articles of export are corn and flour. The forests are not extensive, but the Cypress Swamp and those in the northern district produce lumber. Bog-iron is found not far from the small river Brandywine. Fruits are produced in abundance.

The climate is in general healthy and mild, but much severer in the northern than in the southern district, though the two are hardly more than a degree from one another.

The population amounted according to the census of 1820 to 73,000, and in 1830 to 76,739, of whom 3305 were slaves. On Christiana Creek, towards the northern boundary, and on Brandywine Creek, are several mills for grinding corn, and on the latter river also iron founderies. Vessels are built at Wilmington.

Dover, the capital of the state, has hardly more than 800 inhabitants. Wilmington, at the junction of Christiana Creek and the Brandywine, has a population of 6628, and carries on a considerable trade in corn, flour, and timber. Newcastle has a harbour and 2463 inhabitants.

Delaware is divided into three counties, and sends two senators and one representative to Congress. The State legislature consists of a senate of nine, and of a house of representatives of twenty-one members; the members of the former are chosen for three years, and those of the latter annually, by those inhabitants who pay state taxes. The executive power is in the hands of a governor, who is chosen by the people for three years, but can hold the office only three years in six.

There is a college recently established at Newark; the State has also a school-fund, which produces an annual income of 9000 dollars.

This country was first settled by the Swedes, whom Gustavus Adolphus sent there in 1627. In 1655 it passed into the hands of the Dutch, who ceded it in 1564 to the English. Its name is derived from Lord Delaware, the governor of Virginia. (Darby; Warden, &c.)

DELEGATES, COURT OF, was the great court of appeal in ecclesiastical causes, and from the decisions of the Admiralty Court. It was so called because the judges were delegated or appointed by the king's commission under the great seal; they usually consisted of judges of the courts at Westminster and doctors of the civil law, but lords spiritual and temporal might be joined. This court was established by the statute 25 Henry VIII., c. 19, which was passed in consequence of the practice which still prevailed of appealing to the pope at Rome from the decisions of the English courts in the above-mentioned matters.

By the constitutions made at Clarendon, 11 Henry II., this practice had been condemned; but though frequently checked, it was never thoroughly broken off until the final rupture with the court of Rome, in the reign of Henry VIII. Appeals lay to the court of delegates in three cases —1, where sentence was given in any ecclesiastical cause by the archbishop or his official; 2, where any sentence was given in an ecclesiastical cause in place exempt; 3, where sentence was given in the admiralty, in suits civil and marine, according to the course of the civil law. After sentence by the delegates, the king might grant a commission of review; but the power was rarely exercised, except upon the ground of error in fact or in law, and it was usual to refer the memorial praying for a commission of review to the chancellor, before whom the expediency of granting the prayer was argued.

By statute 2 and 3, William IV., c. 92, the Court of Delegates was abolished, and its powers and functions were transferred to the king in council [Privy Council]; and by the same statute, it is enacted that the decision of the king in council shall be final, and that no commission of review shall in future be granted. (Cowell's *Interpreter;* Bl. *Com.*)

DELFT, a large town in the province of South Holland, on the high road between Rotterdam, the Hague, and Leyden, and about nine miles from Rotterdam. The canal of Schie skirts the road for the greater part of the distance from Rotterdam to the Hague. Delft is an antient and gloomy town; many of the streets are divided by narrow stagnant canals, which are cleaned out by means of sluices: in the centre of the town are two handsome streets with broad canals and shaded with trees. The greater part of the country-houses inhabited by the wealthy merchants of Rotterdam are situated on the banks of the canal near to Delft; the population of the town amounts to 15,000.

Delft was formerly a place of some importance as the seat of the manufacture of a species of pottery, to which it gave its name. The improvements introduced into this manufacture by Wedgwood gave so much advantage to English potteries that those of Holland soon ceased to be of any importance, and in this respect Delft is no longer a place of note. The learned Grotius was born in this town, and his remains are deposited in the new church, a large building which contains one of the most splendid mausoleums in Europe, that of William the First, Prince of Orange, who was assassinated in his palace in Delft in 1584. The mausoleum consists of a sarcophagus, on which is a recumbent statue, in white marble, of the prince, with his faithful dog at his feet. At the four corners are bronze statues representing Liberty, Fortitude, Justice, and Religion. Under an arch at the head of the tomb is another statue, in bronze, of the prince in a sitting posture and in full armour; and at the opposite end is a figure representing Fame, with expanded wings. Over the whole is an exquisitely-wrought canopy supported by four buttresses of white marble, and twenty-two columns of black Italian marble. The town-house stands on one side of a large market-place, and opposite to the new church. It is a very antient building of two stories, with pointed windows, each of which has gilded ornaments beneath it; the walls are painted of a brownish yellow colour. The old church is in another part of the town, and is remarkable only for containing the tombs of Leuwenhoeck and Van Tromp.

At the establishment of the confederation of the United Provinces, Delft was an important town, being one of the six places which first sent deputies to the Assembly of the States. Manufactures of woollen cloths and tobacco-pipes are carried on, as well as a considerable trade in butter, the canal by which it is connected with Rotterdam giving to the town the advantage of a sea-port.

DELHI, a province of Hindustan, lying between 28° and 31° N. lat., bounded on the north by Lahore, on the east by Oude and northern Hindustan, on the south by Ajmeer and Agra, and on the west by Ajmeer and Lahore. It extends east to west from the hilly countries to the central desert, a distance of 240 miles, and in breadth, from north to south, about 200 miles. The province is generally level. To the north of the city of Delhi is a ridge of low hills, that joins the mountains between the Sutledge and the Jumna. Except on the banks of the rivers by which it is traversed, the soil of the province is in a high degree arid and unproductive, but great pains have been taken to remedy this disadvantage by means of irrigation. The province is watered by the Ganges, the Jumna, the Caggur, the Chittung, and the Seraswati, which last was formerly of some magnitude, but is now an inconsiderable stream. In addition to these rivers several artificial canals of great extent have been made. The canal of Ali Merdan Khan extends between the city of Delhi and the upper part of the Jumna, which river it joins opposite to Kurnal, 100 miles higher up than the spot upon which the city of Delhi stands. This canal had long been choked up, but was cleared out and repaired by the English at an expense of 35,000*l.*: the work was undertaken in 1817, and finished in 1820. This canal supplies the inhabitants of Delhi with water for domestic purposes, that of the Jumna, below Kurnal, being much impregnated with earthy salts, owing to which circumstance the overflowing of this river is not followed by the same improvement of the soil which results from the deposits left by the waters of the Ganges and other rivers of Hindustan. Before the restoration of Ali Merdan Khan's canal, the country around the city of Delhi had become scarcely habitable through the deleterious effects of the water. The canal of Sultan Feroze Shah commences from Ali Merdan Khan's canal a little below Kurnal, and is carried to the westward through Hurriana to the frontiers of Bicaneer. The object of this canal was the irrigation of the country through which it has been carried, and which was before dependent upon the periodical rains. This work, which was undertaken in the thirteenth century, had become useless from neglect, when, in 1823, its restoration was undertaken by the English. The Great Dooab canal joins the Jumna a few miles below the place where it issues from the northern mountains, and is carried to the same river nearly opposite to Delhi, a distance of 150 miles. The original constructor of this canal is not known: it is called Zabeta Khan's canal, because a Rohilla chief of that name attempted to restore it, but at that time it was an antient work. It passes through Saharunpore, Rampore, Shamlee, and some other towns, and gives fertility to an extensive tract of country. It is matter of tradition, that Sultan Feroze III. constructed various other canals, water-courses, and conduits, which having been neglected in after years, have been completely choked up, and every trace of them lost. Wheat, barley, gram, and other grains are produced in that portion of the province which lies between the Jumna and the Sutledge, but the long-continued droughts in the western part of Delhi are unfavourable to husbandry. During the rainy season, when the rivers overflow their banks, the pasturage is good, but there are large tracts of country which exhibit only a naked sterility, without cultivation and without trees. The Rohilla district, lying between the east bank of the Ganges and the kingdom of Oude, has a fertile soil and a genial climate. The country is there traversed by numerous streams, which rise in the hills of Kumaon, and whose waters are collected in reservoirs. This district produces sugar and wheat abundantly. The many wars which occurred in the last quarter of the eighteenth century caused the land to be in a great degree neglected, and it has been computed that not more than one-half of the surface of the province is at present under cultivation.

The principal subdivisions of the province are the districts of Bareilly, Hurriana, Moradabad, Shahjehanpore, Rampore, Merut, Saharunpore, Sirhind, and the principality of Pattiahlah.

The city of Delhi was taken by Mahmood about the year 1011, and laid under contribution. This province was afterwards the seat of empire under the Guarian or Afghaun monarchs. The Mogul dynasty was founded by Baber in 1525, when the last of the Afghaun monarchs having been slain by him in battle, he ascended the vacant throne, less as a conqueror than as the deliverer of the people, his army having been principally composed of deserters from Ibrahim the Afghaun sovereign. The throne continued in the possession of this monarch and his descendants until the establishment of the English in India. In the reign of Mahomed Shah III., who died in 1749, the kingdom was invaded by Nadir Shah, and the royal tresury was plundered of vast sums in money and jewels; the vice-roys of the different provinces revolted, and gained their independence one after the other, so that the successors of Mahomed Shah possessed only the actual sovereignty of the city of Delhi and a small district around it. Between 1749 and 1760 three monarchs were successively dethroned: in the latter year Shah Allum II. commenced his reign by an attack upon the English in Bengal, but, being defeated, surrendered himself unconditionally. Upon this, Meer Caussim, a creature of the English, was invested by the Mogul with the government, as Soubahdar of Bengal, Bahar, and Orissa, and engaged to pay out of the revenues of those provinces twenty-four lacs of rupees (240,000*l.*) annually to the mogul. This payment was allowed to fall into arrear, and in 1765 the Mogul was induced by his necessities, and in order to secure payment of the annuity in future, to issue a phirmaun granting to the East India Company what is known in history as the Dewannee, empowering them to collect and appropriate the revenues of Bengal, Bahar, and Orissa. In the following year, under a little gentle compulsion, the Mogul was induced, 'by way of inaum, or free gift,' to assign to the English the Northern Circars. From this time the Mogul retained only a nominal sovereignty; he was attacked first by the Maharattas, and next by the Rohillas, who became masters of the imperial city in 1788, and put out his eyes. After this Shah Allum transferred the small remains of his territory to some French officers in the service of the Maha Rajah, and became a prisoner in the hands of the Maharattas. This state of things continued until 1803, when Lord Lake, after defeating Dowlut Rao Scindiah, took possession of the city and territory of Delhi, and assigned lands for the support of the Mogul, thenceforth entitled King of Delhi. These lands are managed by British officers, and out of the revenue which they yield provision is made for the support of the numerous members of the royal family. These payments, including the sum appropriated for the expenses of the king, amount to upwards of thirteen lacs of rupees (130,000*l.*) a year.

The consequences of the immediate administration of the government by the British have been highly favourable to the inhabitants. Owing to the weakness of the former rulers, many of the villages had found it necessary to unite for their mutual protection, and by this means the more powerful were able to set the government at defiance as regarded the payment of taxes, while the burthen fell the more heavily upon the small and less powerful villages. When the English first took possession of the territory there were about 600 villages that had been deserted, the greater part of which were speedily re-peopled, and chiefly by the old inhabitants or their descendants. The restoration of some of the antient canals, as already mentioned, has been of signal benefit to the people. When, in consequence of the clearing out of Ali Merdan Khan's canal, the water was known to be approaching the city of Delhi, the people went out in swarms to hail it, calling down blessings upon those by whose exertions they were thus benefited. The appearance of the inhabitants indicates that their circumstances are easy; the whole population is well clad, which, in a climate where clothing is not of prime necessity as a protection from the elements, is alone evidence of prosperity. The tenure of the land has never been interfered with by the English, as in other provinces of India. Settlements are made with the village proprietors according to immemorial usage, and no sales of land have been rendered necessary by the possessors falling into arrears. The holders of land are divided into five classes, viz. 1. biswadars, or freeholders, generally descendants of the original settlers of villages; 2. hereditary occupants not liable to ejectment, answering to copyholders in England—this class pays certain fixed dues to the biswadar; 3. tenants at will residing in the villages; 4. tenants at will not residing in any village; 5. mortgagees. The rates paid by each of the other classes to the biswadar have not been ascertained, but it is understood that they are not liable to fluctuation. The land-revenue of the province collected by the Company's government in 1829-30 amounted to 70,54,948 rupees (705,495*l.*).

DELHI, the capital of the province, is situated on the west bank of the Jumna, in 28° 41′ N. lat., and 77° 5′ E. long. According to tradition this city was founded 300 years before the Christian æra by Delu. It formerly stood on the left or eastern bank of the Jumna, and is said to have covered a space of twenty square miles. Bernier, whose account was written in 1663, four years after the accession of Aurengzebe, estimated the circumference at no more than three leagues; but this included only the part within the fortifications, and there were several suburbs, which probably were not very thickly covered with buildings. It is known that this capital was greatly extended in the course of the reign of Aurengzebe, and Major Rennell mentions two millions as the number of inhabitants which it was said to contain at the end of the seventeenth century. The extent of the ruins seems to justify in a great degree this estimate. The Emperor Shah Jehan built a new city in 1631 on the right bank of the Jumna, and gave to it the name of Shahjehanabad, which it has not retained. This is the modern Delhi, which is about seven miles in circumference, and surrounded by walls constructed of large blocks of grey granite: several towers and bastions occur in the walls at intervals. The city has seven gates of freestone, and contains the remains of several fine palaces, the former dwellings of the chief omrahs of the empire. These palaces are each of considerable extent, and surrounded by high walls, containing baths, stabling, and numerous out-buildings. There are several beautiful mosques in good preservation; the largest of these, the Jumma Musjeed, was built by Shah Jehan, and completed in six years. It is built of white marble and red sandstone. There are two fine streets, one 90 feet broad and 1500 yards long, the other 120 feet wide and a mile in length. Down the middle of the first of these streets is an aqueduct, supplied with water from Ali Merdan Khan's canal. The other streets are narrow, but contain many good brick houses. The Mogul's palace, built by Shah Jehan, on the west bank of the Jumna, is surrounded on three sides by a wall thirty feet high, and more than a mile in circumference. It is now used as a bazaar. The chief hall of audience is an open quadrangular terrace of white marble, richly ornamented with mosaic work and sculptures in relievo; and the chapel of Aurengzebe, also of white marble, although small, is of beautiful workmanship: altogether the building, even in its present neglected state, attests the magnificence of its former occupants. The gardens, which were formed by Shah Jehan, are said to have cost a crore of rupees—one million sterling. Their original character has long been completely lost, and they now present the appearance of a small neat park, with some charming groves of orange-trees. Among the ruins of the antient city on the eastern side of the river are some splendid mausoleums in good preservation: those of the Emperors Humaioun and Mahomed Shah, and of Jehanara Begum, daughter of Shah Jehan, are the most remarkable. One of the most generally useful works of the Emperor Shah Jehan in this city is the well, excavated by great labour out of the solid rock upon which the Jumma Musjeed is built. The water is raised from a great depth by complicated machinery to a succession of reservoirs, and fills a pond, from which the inhabitants obtain a supply. The principal wheels having been broken, and the whole machinery out of repair, it was restored by the English a few years after they obtained possession of the city.

This city has at various times undergone great vicissitudes, having frequently been taken by hostile powers, and once, as already mentioned, wholly depopulated through the whim of the Sultan Mahomed, who removed the whole of the inhabitants forcibly to Dowlatebad, near the middle of the fourteenth century. At the close of the same century Delhi was captured and plundered by Timur, during the reign of Nassir Ed Din, whence it would appear that its population had returned. In 1739 the city was again taken and plundered, and part of the suburbs burned, by Nadir Shah. Between that period and the occupation by the British, Delhi was taken by the Abdallees, by the Vizir Gazee Ed Din, and twice by the Maharattas.

No census of the inhabitants has been taken, but it is estimated that the city contains a population of 200,000. This place is well situated for carrying forward the trade between the peninsula of India and the countries to the north and west; the inhabitants consequently exhibit a considerable degree of industry and commercial activity. Cotton-cloths and shawls, for which last the wool is brought from Cashmere, are manufactured in the city, and much indigo is produced in the surrounding country. A considerable trade is also carried on in precious stones, and in large black and red carnelians.

From time to time many endowments had been made by benevolent natives for providing instruction for poor children; these endowments had nearly all been diverted from their intended object, and nothing could be more unsatisfactory than the state of education among the poorer, and indeed among all except the most wealthy, inhabitants of Delhi, at the time of the appointment by the English government in India of a General Committee of Public Instruction, which was planned and brought into operation between 1823 and 1825. A college or madrissa was established by this committee, and funds were assigned for its support by the central government, in addition to which a sum equal to 17,000*l.* was presented to the college by Nawaub Islamaid-ood-Dowlah, late minister of the king of Oude. In addition to this establishment, it appears that in June, 1827, there had been opened 247 schools in Delhi and its immediate vicinity for the instruction of poor children. The number of pupils at the college, which in 1829 was 152, had increased in the following year to 257. More recently another school has been instituted, at which the children of the native gentry are taught the English language, and as many as 68 scholars attended in the first year of its establishment.

Delhi is distant from Calcutta, by the Birbhoom road, 956 miles; from Bombay, by Ahmedabad and Ajmeer, 880 miles; from Madras, by Ellichpore, 1275 miles; from Agra, 117 miles; from Benares, 496 miles; from Lahore, 386 miles; from Oude, 364 miles; and from Seringapatam, 1321 miles; all travelling distances.

(Rennell's *Memoir of a Map of Hindustan*; Mill's *History of British India*; *Reports of Committees of Lords and Commons on the Affairs of India*, 1830, 1831, *and* 1832.)

DELIAN PROBLEM. [DUPLICATION.]

DELILLE, JACQUES, was born at Auvergne in the year 1738, and educated at Paris at the College de Lisieux. Poverty compelled him to accept the office of subordinate teacher at the Collège de Beauvais; but he was soon raised to the rank of professor of humanity in the college of Amiens. While holding this office he commenced a translation of Virgil's Georgics. On his return to Paris he was appointed professor at the Collège de la Marche. He now began to be known as a poet, and several of his pieces attained celebrity, particularly an epistle to M. Laurent. But it was the publication of his Georgics that raised him to distinction, a work to which he was urged by Racine. The public read this translation with enthusiasm, and thought that the French language was capable of representing all the beauties of antiquity. Envy, notwithstanding, appeared here and there; and old forgotten poets were dragged from oblivion, that their works might be lauded at the expense of M. Delille's reputation. In 1774 the author was elected a member of the Académie, and soon after published his celebrated poem 'Les Jardins.' The popularity of this work does not seem to have been equal to that of the Georgics.

Delille accompanied M. de Choiseul Gouffier on his embassy to Constantinople, and took the opportunity of visiting Athens. It was on this tour that he composed his poem 'L'Imagination.' On his return to Paris he became professor of Belles-lettres at the university, and of Latin poetry at the Collège de France. He was unfortunate enough to lose all his property by the Revolution. At the celebration of the Fête de l'Etre Suprême, which took place during the Reign of Terror, Robespierre demanded of Delille an ode for the occasion. The poet, finding refusal was of no use, astonished Robespierre by writing a dithyrambic poem on the immortality of the soul, wherein he warmly supported that doctrine. The troubles of the capital induced him, in 1794, to leave Paris for St. Diez, and subsequently to retire to Switzerland, where the government of Berne made him a citizen. Here he finished his 'Homme des Champs' and 'Les Trois Règnes de la Nature.' He afterwards visited London, where he translated Milton's 'Paradise Lost.' In 1801 he returned to Paris, and died, universally regretted, in 1813.

Delille is one of those poets who will always be honoured by posterity; he reformed the language, and wrote verse with an ease and elegance before unknown. Those who feel pleasure in hearing the Alexandrine verse must be pleased (as far as structure goes) with the didactic poems of Delille. Nothing can be conceived more smooth and easy than the flowing of his lines; and even when he writes in a measure more irregular, as in 'La Conversation,' the same correctness is so carefully attended to, that a person of the slightest ear may read him aloud without once hesitating as to the place where the cæsura lies. To say he was a poet of great imagination would be going too far; but he is entitled to higher praise than that of a mere verse-maker. His images, as well as his lines, are often exceedingly elegant: we may instance an expression in 'Les Jardins,' where, after observing that the beauty of his subject ought to inspire him, he says—

——'Comme un rayon pur colore un beau image,
Des couleurs du sujet je teindrai mon langage.'

His 'Conversation' is an amusing poem; it is a kind of Theophrastus in verse, portraying the different sorts of persons who figure in conversation. It has, however, the fault of most works that treat of characteristics—the persons who appear in it are personified abstractions, instead of individuals as they appear in nature.

DELIQUESCENCE, the change of form which certain bodies undergo from solid to fluid by exposure to the air, and absorbing moisture from it.

There are many substances which partake of this property: among the more remarkable are potash, carbonate of potash, chloride of calcium, and nitrate of copper; all these will in a short time attract sufficient water from the air to become fluid in it. Other saline bodies are deliquescent only in moist air, such as common salt and nitrate of ammonia.

Certain deliquescent salts, and more especially chloride of calcium, are employed for the purpose of drying gaseous bodies which are the subject of experiment.

DELISLE, WILLIAM, a French geographer of great celebrity in his own day, was born at Paris, in 1675. His inclination for the pursuit in which he afterwards became so eminent, was displayed at an early age, and he made considerable proficiency in the art of constructing maps before he was nine years old. This taste was induced and carefully cultivated by his father, who appears to have been also much devoted to geographical and astronomical pursuits.

In 1699 he published a map of the world, which, with other maps and dissertations on geography, led to his election as a member of the Academy of Sciences in 1702; and a little afterwards he was appointed geographer to the king, with a pension. Indeed several of his works were written for the use of his royal pupil, in the course of instruction which he condescended to receive from Delisle.

Delisle's celebrity was not only so great in his own country that no work of history or travel was considered complete without his maps, but it extended all over Europe. He had several flattering invitations from the monarchs of other countries to remove to their capitals; and Peter the Great paid him a personal visit at Paris, to attempt to induce him to go to Russia. All these offers he rejected, but he gave Peter an excellent series of maps of his immense dominions. Fontenelle, in his 'Eloge,' says that the geographer knew their limits better than their owner did himself; and it was probably the respect entertained for him by the Czar that led to his brother Joseph being appointed to take charge of the observatory at Petersburg, with a very considerable salary.

In 1726, Delisle died of apoplexy, aged 51. The most valuable of his writings may be seen in the Memoirs of the French Academy; but any list of them is unnecessary here.

DELISLE, JOSEPH NICOLAS, a younger brother of the preceding geographer, was trained in the same school, and became very eminent in the same pursuits. He was born in 1688.

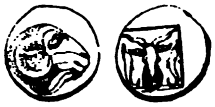
His published labours commenced with an excellent observation of the great total eclipse of the sun in 1706, when he was only 18 years of age; and in 1714 he was admitted a member of the Academy, in the section of astronomy. In 1724 he visited England, and at the recommendation of Newton and Halley, by both of whom he was greatly esteemed, he was elected a Fellow of the Royal Society, on the foreign list. In 1726, the year in which his brother died, he was appointed astronomer to the Czar Peter, a situation which he retained 21 years, when he returned to Paris on account of his health. He was then appointed professor of astronomy in the Royal College of France, which he held many years. Amongst his pupils were Lalande and Messier.

He died in 1768, at the age of 80; having published, besides his 'History of Astronomy' (2 vols. 4to., 1738), no less than 44 papers in the 'Memoirs of the Academy,' and several other dissertations elsewhere.

DELOS (Δῆλος), a small island of the Archipelago, one of the group called Cyclades, lies in the strait between Mycone and Rhenea. According to the poetic tradition, it was originally a floating island. (Strabo, p. 485.) It had several antient names, as Ortygia, Cynthia, and Asteria. It was celebrated from the earliest times as a seat of the worship of Apollo, who was said to have been born there. His temple and that of his mother, Latona, were in the town, which was built on a little plain on the west side of the island, at the foot of a lofty mountain, called Cynthus. (Strabo, p. 485.) The river Inopus ran into the sea to the south of the town; and in the sacred inclosure was a diminutive circular lake, called the τροχοειδὴς λίμνη. (Herod. ii., 170; Tournefort, Voyage du Levant, tom. i., p. 290, fol.) Delos was a place of meeting for the Ionians in the time of Homer; and athletic sports, with dancing and singing, were carried on there in honour of Apollo. (Thucydid. iii., 104.) Polycrates, of Samos, consecrated the adjoining island, Rhenea, to the Delian God, and joined it to Delos by a chain. Delos fell into the power of the Athenians in the time of Peisistratus, and then a partial purification of the island took place by the removal of the tombs which were within sight of the temple. In the year 426 B.C. a complete purification of Delos was made by the Athenians; all the tombs there were removed, and it was proclaimed that no one should thenceforth die or be born in the island, but that all persons likely to die or bring forth should be sent over to Rhenea. (Thucyd. i. 8, iii. 104.) The Athenians instituted at Delos a festival, which returned at the beginning of every fifth year, called the Delia, and sent thither annually a sacred vessel, called the Theoris, in commemoration of the delivery of Athens by Theseus from the Cretan tribute. (Plat. *Phædo*, p. 58, A.) The Persians regarded Delos with so much veneration, that when they were sailing to Eubœa, in 490 B.C., they would not land there, but sent to offer a most sumptuous sacrifice to the Delian Apollo. (Herod. vi., 97.) It was probably on account of the respect which all parties paid to this temple that the Athenians selected it as the depository of the tribute which they collected from their allies after the Persian war. (Thucyd. i., 96.) In 422 B.C. the Athenians removed the whole population of Delos to Adramyttium, where they were allowed to settle by the satrap Pharnaces (Thucyd. v., 1), and where many of them were afterwards treacherously massacred by the Persians. (Thucyd. viii., 108.) When Corinth was destroyed by Mummius, Delos succeeded to the commerce of that city, and was for a time very flourishing; but the generals of Mithridates having landed there in the war between that monarch and the Romans, the island was laid waste by them, and remained in a state of great desolation. (Strabo, p. 486.) In the days of their prosperity the Delians carried on a very extensive slave-trade with Cilicia, and thousands of slaves were landed and sold in a single day. (Strabo, p. 668.) The modern names of this little island are Delo, Deli, Dili, and Sdilli. It is little more than a mass of bare rock.

[Coin of Delos.]
British Museum. Actual size. Copper. Weight, 55 grains.

DELPHI, now called CASTRI, the name of a people and a town of Phocis, celebrated for the oracle of Apollo. Its original name was Pytho; and Homer does not call it by its more modern appellation, which seems to have been derived from the cavern whence the prophetic vapour issued, or from the serpent which Apollo slew there. (Hesych., Δελφός-μήτρα, καὶ ὁ ἐν Δελφοῖς δρακών.) From the description which Strabo gives of the cavern (p. 419, ἄντρον κοῖλον κατὰ βάθους οὐ μαλὰ εὐρύστομον), and from the fact that Delphi was called the navel of the earth, it should seem that the former derivation is preferable. There was a legend that two eagles, sent by Jupiter from the east and west, met at Delphi; and in the temple was a stone adorned with two golden eagles, and other devices, which was called the navel-stone: representations of this may be seen on many antient monuments; as, for instance, in the bas-relief representing the combat between Apollo and Hercules for the Delphic tripod. (Bekker's *Augusteum*, t. i., pl. 5.) The oracles were delivered by a priestess, who sat upon a tripod placed over the mouth of the cavern, and who, having exhaled the vapour, pronounced some prophecy in verse or prose: if in prose, it was afterwards set to verse by the poets attached to the temple. The oracle is said to have been suggested by the effects produced by the vapour upon some goats and the man who attended them. (Pausan. *Phoc.* 5.) The great reputation of the Delphian oracle made it the richest shrine in Greece, as every person who was satisfied with the response he obtained made a point of offering some costly donation to the temple. The first stone temple at Delphi was built by Trophonius and Agamedes: this having been destroyed by fire B.C. 548, a new one was built by the Amphictyons from the proceeds of a voluntary subscription, to which even Amasis, the king of Egypt, largely contributed. The Alcmæonidæ, who contracted to build it, very liberally substituted Parian marble in the front of the building for the common stone of which they had undertaken to construct the edifice. (Herod. ii., 180, v. 62.) The wealth of Delphi naturally attracted plunderers. The Persians under Xerxes made an unsuccesful attempt to get possession of the treasures accumulated there. (Herod. viii., 37.) The Phocian leaders in the sacred war did not hesitate to appropriate them as a fund for the payment of their mercenaries (Strabo, p. 421); and Brennus, the Gallic king, subsequently carried off the greater part of the offerings which remained. (Strabo, p. 188.) [BRENNUS.] There were however still some objects for the rapacity of Nero, who carried off 500 bronze statues at once. (Pausan. *Phoc.* 5.) The city of Delphi, which was the largest in Phocis (Pausan. *Phoc.* 34), was situated on an elevation, sixteen stadia in circumference, at the foot of the south side of Parnassus (Strabo, p. 418); and as the focus of the Dorian religion, and the seat of the most celebrated oracle in Greece, it naturally became populous and wealthy. The population consisted of Dorians, who formed the privileged class, and of the descendants of the bondsmen of the temple. The constitution was originally monarchical (Müller, Dor. iii., 6, § 10); the kings were also called Prytanes. (Müller, iii., 8, § 3.) The Dorian families made an oligarchy, from which the priests, the Pythian court of justice, and a limited senate, were chosen. (Müller, iii., 9, § 17.) Delphi was, from very early times, the rendezvous of an important federal union, or amphictyony, the organization of which is attributed by Strabo, p. 420, to Acrisius. (Thirlwall, *Hist. Greece*, vol. i., p. 376.)


[Coin of Delphi.]
British Museum. Actual Size. Silver. Weight, 22½ grains.

DELPHIA, a vegetable alkali, which exists combined with malic acid, forming malate of delphia in the seeds of the *delphinium staphisagria*, or stavesacre.

The properties of delphia are that it is a crystalline powder, which becomes opaque by drying. It is nearly insoluble in water, but communicates its peculiar taste to it. It dissolves readily in alcohol and æther, and, on the cooling of the solutions, the delphia is deposited in flocks. It is soluble also in the volatile and fixed oils.

With acids it forms neutral salts, which are crystallizable, and have a bitter and acrid taste; they are however but little known, and delphia itself has not been analysed. Like the other alkalis of this class, there can however be no doubt of its being composed of hydrogen, carbon, oxygen, and azote.

DELPHINA'PTERUS. [WHALES.]

DELPHI'NIUM, an extensive genus of the Ranunculaceous order, consisting of annual or perennial herbaceous plants, with irregular spurred flowers, the colours of which are often of the most vivid blue. They are very nearly allied to Aconites, from which they differ merely in their upper sepal being lengthened at the base into a spur instead of at the back into a helmet, and in the petals having no spur at all, but being deformed stalked bodies altogether different in form, and often in colour, from the sepals.

The species abound in the temperate parts of the northern hemisphere, and are often cultivated in gardens under the name of Larkspurs. Among the most showy kinds are ɔhinium Consolida, a hardy annual, of which many ›ties are known as Rocket Larkspurs, D. Barlowii, a nificent double-flowered perennial hybrid, and the Bee ‹spurs, consisting of D. grandiflorum, Sibiricum, Chi- ›e, mesoleucum, and many more. These latter derive name from a striking resemblance on the part of the ls to the black body of a humble bee covered with ›w hairs; the head and legs of the insect being sup- d to be immersed in the cup of the flower.

he only species that has been applied to any useful ›ose is stavesacre, D. Staphisagria, an annual inha- g the warmer countries of the South of Europe. It an upright branched stem, about two feet high, co- d all over with close velvety down, and generally of eenish purple colour. Its lower leaves are round, on stalks, heart-shaped at the base, and divided into five, n, or nine deep lobes of an oval or lanceolate figure; are sharp-pointed, and either undivided or cut into a lateral incisions; on the upper side they are deep green almost smooth; on the under, they are paler and ety. The flowers are a dull greyish green, arranged in x spike at the extremity of the ramifications of the ; their stalk is short and velvety, and has three linear bracts. The sepals are green and velvety externally, a short spur curved downwards. The four petals are rate from each other and smooth; the two upper are and rather long; the two lower have short stalks, and nded, irregular, toothletted limb. The fruit is com- l of three woolly capsules filled with greyish irregu- -triangular compressed very acrid bitter seeds.

ELPHI'NIUM STAPHISA'GRIA, a biennial plant. esacre seeds are not now used internally: when in- ıced into the stomach they cause vomiting, purging, and ulceration of the intestines, and they may even produce us general effects. When powdered, they are employed rnally for the destruction of lice, or they are dissolved negar and made into an ointment, which is employed he cure of scabies, which it is said to effect in seven ght days, and which has found favour in the eyes of persons, as it does not stain the linen, nor has the un- sant smell of sulphur. Its external application to ab- d surfaces is not free from danger. The only case hich its employment is justifiable is, not to remove, but e revulsion of, the cutaneous eruption, when, by its len drying up, the internal organs are oppressed, as, like ranunculaceous plants, it causes acute inflammation pustulation of the skin. It contains an alkaloid, del- , which is soluble in alcohol and æther, and which s salts with acids.

ELPHINORHYNCHUS. [WHALES.]

ELPHI'NUS. [WHALES.]

ELPHI'NUS (the Dolphin), one of the old Greek tellations, referred to the fable of Amphitrite and to of Arion. It succeeds Aquila in the heavens, and its cipal cluster comes on the meridian about three quarters hour later than the principal star (α) of the latter, and ly in the same declination.

Character.	Number in Catalogue of		Magnitude.
	Flamsteed.	Astron. Society.	
	1	2410	6
ε	2	2416	3
η	3	2419	6
ζ	4	2423	5
ι	5	2429	6
β	6	2428	3
κ	7	2435	6
θ	8	2434	6
α	9	2439	3
	10	2442	6
δ	11	2443	3½
γ	12	2452	3
(λ)	13	2456	5
(χ)	16	2479	6
(μ)	17	2480	6
(ν)	18	2485	6

DELTA, the name of the fourth letter of the Greek alphabet. It was originally given by the Greeks to that part of Lower Egypt which, being comprised between the two main branches of the Nile and the sea, had a triangular form, somewhat resembling the Greek letter Δ. The same name has since been extended to all those alluvial tracts at the mouths of great rivers which, like the Nile, empty themselves into the sea by two or more diverging branches, though the spaces circumscribed by these branches and the sea-line have, in many cases, very little of the triangular form.

Of the different circumstances which contribute to the formation of deltas two are essential: first, the river, in the lower part of its course, must open out or spread sufficiently to have the motion of its waters considerably retarded; and secondly, it must either be habitually or periodically charged with fine detrital matter, which it deposits when its motion is diminished or its progress checked.

The operative process of formation varies in different cases: we shall confine ourselves to the more general.

Whenever, in consequence of heavy rains in tropical countries, or sudden thaws in more northern climes, rivers become greatly and rapidly swelled, their channels can no longer contain them, and they therefore overflow the lowlands at their embouchures to a greater or less extent. The waters thus spread out have their velocity diminished, and hence let fall the fine detrital matter with which they are charged. This detritus, though it covers the whole of the inundated surface, does not form in all parts a stratum of equal thickness. Every deviation from horizontality in the inundated land produces a particular and corresponding current in the moving mass of waters. Every tree, hillock, stone, or other obstruction, causes an eddy, and the natural result of these various currents and eddies is to distribute the sediment unequally over the bottom. When the waters begin to subside, some portions of the land are uncovered before the rest, forming, as it were, a number of islands. The water continuing to run off between these, deepens the hollows still more, so that when the inundation has all run off, the whole space is more uneven than it was before, and intersected by numerous incipient channels. The floods of the succeeding years increase the effect, until, in course of time, the highest parts are so raised, and the intervening channels so deeply excavated, that the latter constitute permanent branches of the river, and a delta is formed.

An inundation however is not always necessary to the formation of a delta. If the mouth of a river be large, a delta may be formed by another process. Thus, when the river is charged with mud or sand, it is found that the middle of the stream is the most loaded, because its rapidity is there greatest; hence, when that rapidity is diminished, as it is of necessity on reaching the wide mouth, or æstuary, a central deposit is formed, which in time rises above the surface and becomes an island, dividing the stream into two branches. Every succeeding flood brings a fresh tribute to the island, which increases seaward; for while the upper end is abraded by the impinging of the main stream, there is a dead water immediately in front of the lower part where fresh detritus continually subsides. Nor does the island increase merely in length; it also acquires breadth, the two branches of the streams diverging more as they advance. Hence the alluvial island acquires something of a triangular form. If the river be large, the lateral branches will be disposed each to form a minor delta upon the same principle as the main stream did. Thus new branches are formed, some of which converge towards the prolongation of the line of the main trunk. The sinuosities of the deltoid branches also drive their currents, in some places, back upon the island, in which, from its loose texture being favourable to abrasion, indentations are easily made, and finally channels cut through, dividing it into two or more. From these operations, simply or combined, the alluvial tract is frequently intersected by a great many deltoidal branches, dividing the whole into what, for the sake of distinction, may be termed *deltoid islands*. Such deltas, however, can hardly be formed upon coasts subject to tides; they almost exclusively occur at the mouths of rivers disemboguing into lakes or tideless seas. The numerous banks at the mouth of the Thames would soon rise into islands, and a delta would be formed, were it not for the effect of the tides.

In some cases, deltas owe their formation almost wholly to the nature and direction of the currents of the ocean, the form and nature of its bed in the neighbourhood of the mouths of rivers, the prevalent winds and tides, &c. In almost all cases these circumstances greatly modify their form and extent and nature. Some deltas are very extensive; some are sterile, while others are highly fertile, such as the delta of the Nile; some are thickly wooded, such as the delta of the Ganges; some are swampy, as the delta of the Missisipi, &c. With regard to the branches which inclose or intersect them, there is also much variety, both as to their total number, and the number and situation of such among them as are navigable. Sometimes the two outer or deltoid branches of the river are the largest; sometimes one only is navigable, and that may be in the middle or on either side, and sometimes many are navigable; thus the delta of the Wolga has sixty-five channels, eight of which are navigable; the Orinoco fifty, of which seven are navigable. The Danube has five navigable mouths, and the Nile at present only two.

Deltas are formed not only at the mouths of rivers which disembogue into the sea, but sometimes at the confluence of tributary streams, with their recipients, as is seen in many rivers of America; such as the Rio Branco and the Rio Jupura, which respectively enter by a great number of branches into the Rio Negro and the Marañon, or river of Amazons. Rivers entering lakes also, as we have already hinted, form deltas at their mouths.

Some deltas are still in progress of formation; others have been obliterated by various causes, and all are, more or less, undergoing different modifications.

The principal deltas of Europe are those of the Rhone, the Danube, and the Po. Many other rivers, however, form deltas, such as the Ebro, the Vistula, the Neva, the Dwina, the Don, &c. The delta of the Rhine has been, as it were, obliterated by the irruption of the Zuydersee, though the whole of Holland is a formation of deltoid islands, created by the anastomosing branches of the Rhine, the Meuse, and the Scheldt. The deltoid form of the mouths of the Petchora is no longer recognizable in the group of islands at its embouchure.

In Asia, the principal deltas are those of the Ganges, the Indus, the Irrawaddy, the Cavery, the Euphrates, the Oural, the Lena, and the Kolima.

The Wolga, before entering the Caspian, is split, as we have said, into innumerable branches; but the space which they inclose, in strictness, bears little resemblance to a delta.

In Africa, the Nile and the Niger; and

In America, the Missisipi and the Orinoco form the principal deltas.

DELU'C, JEAN ANDRE', was born at Geneva, 1727. His father, François Deluc, was a watch manufacturer, not only skilful in his trade but conversant with other branches of knowledge, and a writer upon religious and political matters. His son also took part in the disputes between the négatifs and the représentans, or aristocratic and democratic parties, of his native republic, to the latter of which he belonged, and he was sent, in 1768, by his fellow representatives to Paris to plead their cause with the Duke of Choiseul, the prime minister in France. On his return in 1770 he was made a member of the legislative council, but not long afterwards he left Geneva and its politics for England, to devote himself entirely to scientific pursuits. He had, from an early age, applied to the study of geology, and had made excursions in the Alps, while his brother investigated the mountains of Italy for the same object. His own words best explain his purpose: 'My brother and I entered together upon our geological career, while I yet lived at Geneva, and after a certain period we came to a first conclusion, which from that time has been our guide, namely, that an essential distinction was to be made among the various phenomena which the surface of the earth exhibits, with respect to their causes, by determining as to each of them whether the causes which have produced it are still in action, or have, at some epoch, ceased to act. . . . Continuing our observations, we came at length to a conviction that the formation of our continents, with regard both to their composition and general form, as well as their existence above the level of the sea, should be ascribed to causes no longer in action on our globe, and that the whole of the effects of the still-existing causes have been limited to a modification of that original state. After having quitted Geneva, I continued my observations in various countries, and more particularly on the sea coast; my brother likewise pursued his, and we communicated our remarks to each other. I saw the possibility of determining, by the action of actual causes, what had been the state of our continents at their birth, and also the possibility of determining the time elapsed since that period. I then wrote my first geological work, "Lettres Physiques et Morales sur l'Histoire de la Terre et de l'Homme," 8vo. La Haye, 1778.' These letters were addressed to Queen Charlotte, consort of George III., who appointed Deluc her reader; they relate only to the Alps of Switzerland; but in the following year appeared a continuation of the work, under the same title, including Deluc's travels through Rhenish Germany, Hanover, Friesland, Holland, Belgium, &c., in 5 thick vols. 8vo. These letters are not merely scientific treatises; they are also descriptive of scenery, of the inhabitants, and their manners; they contain statistical and moral observations, and many of them are full of interest even to the general reader. One great conclusion which Deluc came to from all his observations was, that the present continents were left dry by a great and sudden revolution of comparatively recent occurrence, not more than four or five thousand years since, which revolution buried under the sea the countries previously inhabited. This opinion has been also maintained by Saussure, Dolomieu, and Cuvier. Deluc agreed with Saussure in considering that the materials which form our mountains were first deposited in horizontal and continuous strata, and that their present broken and dislocated state is the effect of subsequent catastrophes, which however were previous to that which left them dry. Deluc's whole system concerning the various epochs of the creation corresponding to the six days or rather periods of Genesis, appears in several of his numerous works, and especially in his 'Lettres Géologiques sur l'Histoire de la Terre, addressed to Blumenbach, 1798; in his 'Traité élémentaire de Géologie,' 1808, which was also published in English; and in his 'Geological Travels in the North of Europe and in England,' 3 vols. 8vo., London, 1810. Deluc made also many observations on the atmosphere, and the phenomena of air, heat, and light. He wrote 'Recherches sur les Modifications de l'Atmosphere, contenant l'Histoire critique du Baromètre et du Thermomètre, un traité sur la construction de ces instrumens, des expériences relatives à leurs usages, et principalement à la mesure des hauteurs, et à la correction des réfractions moyennes; avec figures,' 2 vol. 4to, Geneva, 1772. It is perhaps in this branch of experimental philosophy that Deluc rendered the most positive services to science. He made great improvements in the barometer, especially as applied to the measurement of heights. [BAROMETER.] He also wrote 'Mémoire sur un Hygromètre comparable presenté à la Societé Royale de Londres.' Among his other works may be mentioned, 'Idées sur la Meteorologie,' 1786; 'Introduction à la Physique Terrestre par les Fluides expansibles,' 1803; 'Traité Elémentaire sur le Fluide Electro-Galvanique,' 1804.

Deluc's earnestness in availing himself of his geological observations to prove the veracity of the Mosaic narrative involved him in controversial correspondence with several of his contemporaries, and particularly with Dr. Teller of Berlin: 'Lettres sur le Christianisme, addressées au Dr. Teller,' 1801; 'Correspondance particulière entre le Docteur Teller et J. A. Deluc,' in French and German, 1803–4; and also with Professor Reimarus of Hamburg, 'Annonce d'un Ouvrage de M. J. A. Reimarus sur la Formation du Globe, par J. A. Deluc,' Hanover, 1803. But though Deluc was earnest in his religious conviction, and in supporting it by arguments, his spirit was far from being intolerant, as he shows in numerous passages of his works, and especially in his 'Discours sur la Tolérance,' in the 1st vol. of the 'Histoire de la Terre et de l'Homme.' He was a great admirer of Bacon, and wrote 'Précis de la Philosophie de Bacon, et des Progrès qu' ont fait les Sciences Naturelles par ses Preceptes et son Example,' 2 vol. 8vo., Paris, 1802. He wrote also on education: 'Lettres sur l'Education Religieuse de l'Enfance, precédées et suivies de détails historiques,' 8vo., 1799; besides many other memoirs, treatises, &c., which appeared in the *Journal des Sçavans*, *Transactions Philosophiques*, and other scientific journals, French, English, and German. He was a member of the Royal Societies of London, Dublin, and Göttingen, and correspondent of the academies of Paris, Montpellier, &c. He was appointed in 1798 Professor of philosophy and geology in the University of Göttingen. He passed several years in Germany, at Berlin, Hanover, Brunswick, &c. After the battle of Jena he returned to England, where he passed the remainder of his life, chiefly at Windsor, where his situation of reader to the queen gave him a free access to the royal family, by the members of which he was much respected. He died at Windsor, November, 1817, in his 91st year. His brother and fellow observer Guillaume Antoine Deluc died at Geneva in 1812, and left a rich collection of mineralogy, which has been increased by his son André Deluc, who is the author of an 'Histoire du Passage des Alpes par Annibal,' Geneva, 1818.

DELVI'NO, a livas, or inferior pashalik, of European Turkey, occupying the greater part of the coast of antient Epirus, and especially of the districts of Chaonia and Thesprotia, from the Khimára mountains on the north-west to the river Acheron on the south-east, a length of about 70 miles. It extends inland between 20 and 25 miles. A ridge of mountains divides it to the north-east from the valley of the Voiussa, the antient Aous, in the pashalik of Avlona, and several other groups, among which are the mountains of Paramithia and of Souli, divide it to the south and south-east from the pashalik of Joannina. The river Kalamas, descending from the high lands near Joannina, flows through the country of Delvino, and enters the Adriatic north of the bay of Gomenizza. A great part of the coast of Delvino faces the island of Corfu. Delvino, the head town of the pashalik, said to have about 8,000 inhabitants, is situated inland, about 15 miles north-east of Butrinto, the antient Buthrotum. Farther north, among the mountains, is Gardiki, the population of which was exterminated by Ali Pasha. Parga, formerly a Venetian possession, lies on the south coast of the pashalik of Delvino. Philates, near the banks of the Kalamas, is inhabited by a tribe of warlike Epirotes. There are no other places of any importance in the pashalik.

DELVI'NO, a town in the interior of Albania (Turkey in Europe), in a rich plain at the foot of the south-western slope of the mountain range of Khimára. In the map prefixed to 'Hobhouse's Travels in Albania' it is placed on a rivulet, the Pistritza, which flows into the sea at Butrinto or Bucintro, (the antient Buthrotum,) opposite Corfu; but in those prefixed to the Rev. T. S. Hughes's and Dr. Holland's Travels it is not so; and such is the present uncertain state of Albanian geography, that even the site of an important town cannot be exactly laid down. Delvino has a population, according to Mr. Hobhouse, of 8000 persons. Upon the conquest of Albania by the Turks, it was made the residence of a Turkish governor, whose sway extended over the accessible part of the surrounding territory. The governor (whom Mr. Hobhouse describes as a pasha of two tails) was one of those reduced to subjection by Ali Pasha. There is a strong castle at Delvino.

DE'MADES, an Athenian orator and demagogue, contemporary with Demosthenes. According to Suidas he was originally a sailor, according to Proclus a fishmonger. He took the part of Philip in the Olynthian affair, and was liberally rewarded by that prince, who received him well when he fell into his hands after the battle of Chæronea. He was mainly instrumental to bringing about the peace between Macedon and Athens, which followed that victory. (Demosth. *de Corona*, p. 320.) When Alexander, in 335 B.C., demanded that the Athenian orators who were opposed to him should be delivered into his hands, Demades induced him to relinquish his claim. (Diod. xvii. 15; Plut. *Dem.*, c. xxiii.) Demades seems to have yielded to the bribery of Harpalus. (Dinarch. c.; Demosth., p. 101.) It appears that he was concerned with Phocion in delivering up Athens to Antipater. (Corn. Nepos, *Phoc. II.*) In 318 B.C. he went on an embassy to Antipater to induce him to remove the garrison from Munychia, and took his son Demeas with him. Unfortunately, a letter which he had written to Perdiccas fell into the hands of Cassander, and in revenge for the offensive terms in which Antipater was alluded to in it, that prince put to death the orator and his son. Cicero (*Brut.* 9) and Quintilian (ii. 17, § 13, xii. 10, § 49) assert that he did not write anything; but a fragment of his speech in defence of his twelve years' administration (ὑπὲρ τῆς δωδεκαετίας) is still extant, and Suidas attributes to him a history of Delos, and of the birth of the children of Latona. Pytheas (*in Athen.*, p. 44 F,) describes him as a profligate drunken fellow. He was a great wit, and many of his sallies are recorded.

DEMBEA. [ABYSSINIA; NILE.]

DEMERARA. [GUIANA, BRITISH.]

DEME'TER, CERES, the oldest, and, with a view to the formation of a systematic mythology, by far the most important personage in the Greek polytheism. Her name Demeter (γῆ, *earth*, μήτηρ, *mother*), or Deo, points to her as a representative of the earth and its productions in the old elementary worship of Greece; and she is invoked by Orpheus (apud Diod. Sic. i. 12) as Mother Earth, the giver of all sorts of riches (γῆ μήτηρ πάντων Δημήτηρ πλουτοδότειρα). The title Father is in the same manner given to the air by Lucretius (i. 25),

> Postremo pereunt imbres ubi eos *pater Æther*
> In gremium *matris Terrai* præcipitavit;

and the Greeks considered all vegetable productions as the offspring of a union between these two elements. (See the fragment of the *Danaides* of Æschylus in Hermann's *Opuscula*, vol. ii., p. 334.) The mystic union of these two principles, from which all the other deities sprung up, is an invention of the later philosophers. The most remarkable feature which the worship of this deity presents in Greek mythology is her intimate connexion with Bacchus. [BACCHUS.] Without entering into any of the questions agitated with respect to the origin or nature of the Bacchic rites, it may be as well to offer here a brief explanation of this connexion of the two deities, a connexion which seems to have belonged to all the different modifications of the two worships. In the first place, we may remark, that, in the Roman mythology, as well as in the Greek, we continually find duplicate divinities, male and female, and sometimes deities of a doubtful sex. (Niebuhr's *Rome*, vol. ii., p. 100-101, Eng. Tr.; and *Philolog. Mus.*, vol. i., p. 116-117.) Thus the sun-god and the moon-goddess have always been paired together. Now Demeter is not merely the goddess of the earth, in which form she is the wife of Æther; she is also the moon (Creuzer, *Symbolik*, iv., 188), as the wife of Bacchus, the sun-god, or wine producer (for the terms were convertible), as in the passage of Virgil referred to under BACCHUS; and she is the queen of the lower world as the wife of the same Bacchus considered as the god of Hell in the mystic worship of the Cabiri, where, according to the scholiast on Apollon. Rhod. i. 917, Axiokersa (who was the same as Demeter or Proserpine) is the wife of Axiokersos or Pluto. (See the passage of Herodotus, quoted under BACCHUS, and compare CABIRI.) At Eleusis these two deities were worshipped with peculiar solemnities; the mysterious secrets which were communicated to the initiated have not been divulged to us; and the many ingenious attempts which have been made to explain their purport have, it is to be feared, been attended with very little success; all that can be said of them with any degree of certainty is, that they were probably a slightly modified adaptation of the Samothracian rites, for the deities appear to have been nearly the same. It does not seem right to infer from the similar relation subsisting between Osiris and Isis in Egypt, and Bacchus and Demeter in Greece (Macrob., *Saturnal.*, i. 2, p. 210; Herod. ii. 144; Plutarch *de Iside*, p. 354 F.), that the worship of these deities was derived from Egypt in particular; still less can we adopt Creuzer's theory of the Indian origin of this religion. It seems more reasonable to conclude that the same causes which might contribute to produce such an elementary worship in the East would have the same effect in Greece; for the constitution of the human mind is much the same in all parts of the world.

Demeter is represented in antient monuments with a basket (κάλαθος) on her head, with some ears of corn in her hand, and as seated in a chariot drawn by lions, panthers, or elephants. (Winckelmann's Works, vol. ii. 515, iv. 119.) A collection of her names and epithets is given by Creuzer. (*Symbolik*, vol. iv., p. 301, fol) The meaning of her Roman name, Ceres, by which she is generally mentioned in English books on mythology, is not known; it may be derived from *c(e)reare, creare*, to produce (Creuzer, *Symbolik*, iv., p. 313); or it is connected with her Cabiric name, Axiokersa, in which case it also signifies the producer; for according to Hesych., κέρσαι = γαμῆσαι, κέρσης = γάμος and μίξαι = κέρσαι. On the mysteries of this goddess the reader may consult, in addition to Ouvaroff and Sainte-Croix, the elaborate work of Lobeck, *Aglaophamus; Regiom.* 1830.

DEME'TRIUS PHALE'REUS, an Athenian, the son of Phanostratus, and a scholar of Theophrastus. His earlier years were devoted to the study of philosophy: he first began to take a part in public affairs about 320 B.C. (Diog.

Laert., v. 5—75.) He was condemned to death at the same time with Phocion (317 B. C.) for espousing the Macedonian party, but had the good fortune to escape by flight (Plut. *Phoc.* cxxxv.), and was shortly after made governor of Athens by Cassander. He maintained his authority for ten years, and, according to Strabo (p. 398), Athens was never more happy than under his government. In his administration of affairs he was so popular that 360 statues were erected in his honour; but when Demetrius Poliorcetes came to Athens (307 B. C.) and proclaimed the old democracy, he was obliged to fly a second time, and would hardly have escaped had not his enemy ensured him a safe retreat to Thebes. (Diodor. Sic. xx., 45, 46.) After the death of Cassander (296 B. C.) Demetrius retired to the court of Ptolemy Soter, king of Egypt, where he was received with great distinction, and where he probably wrote most of the numerous works attributed to him by Diogenes. (v. 5—80.) Unfortunately, however, he made an unsuccessful attempt to dissuade his patron from altering the succession to his crown in favour of his children by Berenice. When Ptolemy Philadelphus came to the throne in 283 B. C. he had not forgotten the counsel which would, had it been listened to, have deprived him of his father's preference, and banished the author of it to Busiris, where he soon after died from the bite of an asp. A treatise on rhetoric, ascribed to him, has come down to us, and has been edited separately by Schneider, Altenburg, 1779.

DEME'TRIUS POLIORCE'TES (the city-taker) was the son of Antigonus (one of the successors of Alexander the Great) and Stratonice. He appears to have been born about the year 334, for Plutarch tells us (*Dem.* v.) he was 22 when he was defeated by Ptolemy and Seleucus at Gaza (312 B. C.). Demetrius soon wiped out the disgrace which had attended his first feat of arms by a brilliant victory which he gained over Cilles, one of the generals of Ptolemy. (Plut., *Dem.* vi.) In the division of Alexander's empire, which shortly followed, it was determined that Greece should be freed from the dominion of Cassander, and this duty Demetrius willingly took upon himself. Demetrius Phalereus then governed Athens as Cassander's deputy, and had obtained great popularity; but when Demetrius Poliorcetes took Munychia and offered a democratical form of government to the Athenians (307 B.C.), the disciple of Theophrastus was glad to owe a safe retreat to Thebes to the generosity of his namesake. In the following year Demetrius gained a great naval victory over Ptolemy, and conquered the isle of Cyprus, in consequence of which his father Antigonus assumed the title of king. (Plut. *Dem.* xvii. xviii.) In 304 Demetrius laid siege to Rhodes, but, although he showed all the resources of his genius in inventing new and extraordinary machines for taking the city, he was unable to make himself master of it, and, after a year's siege, he formed an alliance with the Rhodians against all persons, with the exception of Ptolemy. (Plut. *Dem.* xxi.) Demetrius then returned to Greece, forced Cassander to raise the siege of Athens, and pursued him to Thermopylæ: after this he took Sicyon by surprise, and then Corinth and Argos, where he married Deidamia, sister of Pyrrhus, king of Epirus. Cassander was willing to make peace, but Antigonus showed so little moderation that the other successors of Alexander were induced, through fear of the consequences of his ambition, to form a coalition against him. Antigonus met his enemies at Ipsus, in Phrygia, and fell in the battle. (Diod. xxi.; Plut. *Dem.* xxviii—xxx.) Demetrius escaped from the defeat with 9000 men to Ephesus, whence he passed over to the Cyclades, and, being excluded from Athens, sailed for the Chersonese. While he was there engaged in laying waste the lands of Lysimachus, Seleucus sent to him to demand his daughter Stratonice in marriage, a proposal to which he readily agreed. In 299 B. C. he laid siege to Athens, which was under the dominion of the tyrant Lachares. The city soon surrendered, and was treated with great kindness by the conqueror. (Plut. *Dem.* xxxiv.) The quarrel of Alexander and Antipater, the two sons of Cassander, gave him an opportunity of getting possession of Macedon, which he easily accomplished after having put to death Alexander, who had called him in to assist him against his brother. (294 B.C.) Although master of the greater part of Greece, he was eager to get possession of the whole, and attacked and took Thebes. But his popularity was now on the wane, and he was easily driven from the throne of Macedon by Pyrrhus the Epirote, in 287 B.C., whose good qualities had become known to the subjects of Demetrius. (Plut. *Dem.* xliv.) Shortly afterwards he fell into the hands of Seleucus, whose kingdom he had invaded, and was detained by him in honourable confinement till his death in 283 B. C. This celebrated man was so eminently handsome in his person that sculptors and painters always fell short of his beauty. He was much given to debauchery, and is said to have shortened his life by his excesses.

[Coin of Demetrius Poliorcetes.]

British Museum. Actual Size. Silver. Weight $260\frac{8}{10}$ grains.

DEME'TRIUS SOTER, king of Syria, the son of Seleucus Philopater, passed his youth at Rome as a hostage. He effected his escape, partly through the assistance afforded him by the historian Polybius, and mounted the throne of his ancestors about 161 B. C. He contended in vain with the Maccabees, who then ruled over Judea, and died valiantly fighting against Alexander Balas about B. C. 150.

[Coin of Demetrius Soter.]

British Museum. Actual Size. Silver. Weight $256\frac{8}{10}$ grains.

DEME'TRIUS NICA'TOR was the son of Soter. Having been sent to Cnidos, towards the end of his father's reign, he did not fall into the hands of the successful usurper Bala, and with the assistance of the king of Egypt, whose daughter Cleopatra he had married, soon possessed himself of his father's throne. As, however, he gave himself up, after a while, to luxury and indolence, and did not attend to the duties of his station, his numerous enemies contrived to expel him from his kingdom, and he remained for some time in the hands of the Parthians, upon whom he had ventured to make war. While still in captivity he married a daughter of Mithridates, the Parthian king; and his former wife Cleopatra formed a union with his brother Antiochus, who became king of Syria in his absence, and fell in battle with the Parthians. Phraates, before this event happened, had released Demetrius, in order that he might divide his brother's party, and he consequently regained his kingdom after the death of Antiochus. But Demetrius governed Syria no better than before his captivity. He was again expelled by another usurper, and was assassinated by the orders of his wife Cleopatra in a temple at Tyre, where he had taken refuge, B. C. 126.

[Coin of Demetrius Nicator.]

British Museum. Actual Size. Silver. Weight $260\frac{8}{10}$ grains.

DEMETRIUS of Bactria. [BACTRIA.]

DEMI-LUNE. [Ravelin.]

DEMOCRACY (*δημοκρατία*) a word taken from the Greek language, like aristocracy, oligarchy, monarchy, and other political terms.

The third book of Herodotus (chap. 80—82) contains what we may consider as the views of the oldest extant Greek historian on the merits and defects of the three respective forms of government as they are called, democracy, oligarchy, and monarchy. It would be difficult to extract from the chapters referred to an exact definition of democracy, but still we learn from them what were considered to be essentials; first, complete political equality (*ἰσονομίη*); secondly, the election of magistrates by lot (*πάλῳ*) (which, coupled with the first condition, implies that public offices must be accessible to all); thirdly, responsibility or accountability in public functionaries (*ἀρχὴ ὑπεύθυνος*), which implies a short term of office and liability to be ejected from it; fourthly, the decision by the community at large of all public matters (*τὸ βουλεύματα πάντα ἐς τὸ κοινὸν ἀναφέρειν*).

It is unnecessary to mention the merits and defects of a democracy as pointed out in the above chapters, the defects being only certain consequences supposed to flow from, and the merits certain advantages incident to, a democratical institution, and neither being essentially parts of the fundamental notion of a democracy.

In forming a notion of a democracy as conceived by the Greeks, and indeed in forming any exact notion of a pure democracy, it is necessary to consider a small community, such as a single town with a little territory, and to view such a community as an independent sovereignty. The institutions which in modern times have approached most nearly to the form of a pure democracy are some of the Swiss cantons. The boroughs of England, as existing in their supposed original purity, and as partly restored to that supposed original purity by the late Municipal Corporation Act, may help to explain the notion of a democracy, though they are wanting in the necessary element of possessing sovereignty. Further, to conceive correctly of a Greek democracy and of some of the democracies of the North American Union, it must be remembered that the whole community in such States consisted and consists of two great divisions, freemen and slaves, of whom the latter form no part of the political system.

In most Greek communities we find two marked divisions of the freemen, the 'few' (*ὀλίγοι*) or 'rich' (*δυνατοί, πλούσιοι*), and the 'many' (*οἱ πολλοί, ὁ δῆμος*) or 'not rich' (*ἄποροι*), between whom a fierce contest for political superiority was maintained. This contest would often end in the expulsion of the 'few,' and the division of their lands and property among the many; sometimes in the expulsion of the leaders of the 'many,' and the political subjugation of the rest. Thus the same state would at one time be called a democracy; at another, an oligarchy, according as one or the other party possessed the political superiority; a circumstance which evidently tended to confuse all exact notions of the meaning of the respective terms used to denote the respective kinds of polities. Under the circumstances described, what was called an oligarchy might perhaps be appropriately so called; what was called a democracy was not appropriately so called, even according to the notions entertained by the Greeks themselves of a democracy; for such so-called democracy was only a fraction of the community that had obtained a victory over another fraction of the community, less numerous and individually more wealthy: for the 'few' and the 'rich' were necessarily united in idea; it being, as Aristotle remarks, incident to the 'rich' to be the 'few,' and the rest to be the 'many.'

Aristotle felt the difficulty of defining what a democracy is. He observes (*Politik.* iv. 4) that neither an oligarchy nor a democracy must be defined simply with reference to the number of those composing the respective bodies: if a considerable majority, he says, are rich, and exclude the remaining body of freemen, who are poor, from political rights, this is not a democracy. Nor, on the contrary, if the poor, being few, should exclude the rich, being more numerous, from all political power, would this be an oligarchy. Such a supposition as the latter is impossible in a sovereign community, except during a short period of revolutionary change; but it is not an impossible supposition in a case where a community, not being sovereign, is governed by a constitution or charter granted by the sovereign power. In the borough of Malmsbury (*Report on Municipal Corporations*, vol. i., p. 77), at the time of the Report, a very small number of the population formed the ruling body: this body filled up vacancies in their own number, was irresponsible to the inhabitants, and chiefly composed of labourers without education, and of the least instructed class of retail tradesmen. The then alderman, the chief magistrate of the town, was a pig-killer, and scarcely able to write his name. Such an anomalous political constitution requires a new and appropriate name.

Aristotle, after some preliminary remarks, concludes by defining a democracy to be, when the freemen and those not the rich, being the majority, possess the sovereign power; and an oligarchy, when the rich and those of noble birth, being few, are in possession of the sovereign power. This definition of an oligarchy necessarily implies that the majority are excluded from participating in the sovereign power. It might be inferred, on the other hand, that in this definition of a democracy the few are excluded from the sovereign power; and such in this passage should be the meaning of the author, if he is consistent with himself. In another passage (iv., 4), where he is speaking of the different kinds of democracy, he speaks of the first kind as characterized by *equality* (*κατὰ τὸ ἴσον*): and by this equality he understands 'the not rich having no more political power than the rich, neither body being supreme, but both equal, and all participating equally in political power.' Such in fact approaches very near the exact notion of a pure democracy, or at least a democracy as pure as we have any example of; for women, persons of unsound mind, males not adult, and slaves, are excluded from political power even in democracies.

A pure democracy then is where every male citizen, with the exceptions above mentioned, forms an equal and integral part of the sovereign body; or, as Aristotle expresses it, the democracy is 'monarch, one compounded of many.' This is the fundamental notion of a democracy: every other institution incident to or existing in a democracy is either a necessary consequence from this notion or a positive law enacted by the universal sovereign.

Thus it is absolutely necessary, in order that a democracy should exist and continue to exist, that the whole body should recognize the principle that the will of the majority must always bind the minority. It seems also necessary for the whole body to admit the principle that every member of the sovereign power shall express his opinion without fear, control, or any influence, that is, secretly. Every freeman being an equal part of the sovereign, has no responsibility, such as some persons dream of: the many who compose the sovereign are no more responsible than when the sovereign is one, and the notion that the vote of those who possess sovereign power should be open and notorious, on the ground of their being responsible, is inconsistent with the notion of their possessing sovereign power. The only way in which the universal sovereign can be so made responsible to a positive morality (for there is nothing else that such sovereign can be made responsible to) must be by the universal sovereign making such open voting a constitutional rule, which rule the same body that made may repeal when it pleases. Such rule, however, being inconsistent with the free exercise by each individual of his share of sovereignty, would be an act of suicide in the body politic.

If the democracy consider a constitution [Constitution] to be useful for carrying into effect the will of the sovereign, such constitution, when made by the expressed will of the majority, whatever may be the terms of such constitution, does not affect the principle of the democracy. Such constitution can be altered or destroyed by the same power that made it. If a representative body is necessary for effecting the purposes of the sovereign, such body may be elected and invested with any powers by the sovereign body, always provided that the representative body is responsible to the sovereign whose creature it is. Whatever institutions are created, and whatever powers are delegated by the sovereign many, the principle of pure democracy still exists so long as every individual and every body of individuals who exercise delegated power are responsible to the sovereign body by whom the power is delegated. Hence if property be made a qualification for certain offices, as in one of the forms of democracy mentioned by Aristotle, by the universal sovereign, such requisite qualification does not in itself alter the nature of the democracy, being only a rule or law fixed by the sovereign. It is however a rule or law of that class, the *tendency* of which, where the sovereign power is possessed by the many, is to undermine and ultimately destroy the power that made it.

Experience has shown that even where the universal people are sovereign, if the political community is large and spread over a great surface, every delegation of power, however necessary, is accompanied with danger to the existence of the sovereign power. The more complicated the machinery of administration becomes, and the more numerous are the administering bodies interposed between the sovereign and the accomplishment of the object for which the sovereign delegates part of his power, the greater is the risk of those who have had power delegated to them making themselves the masters of those who have conferred the power. In a democracy the great problem must be to preserve unimpaired and undisputed the vital principle of the sovereign power being in all and in every individual, and to combine with this such a system of delegated powers as shall in their operation always recognize that principle to which they owe their existence.

Of all the forms of government only two seem capable of exact definition, monarchy and democracy, and those two only seem to rest on any clear and intelligible principle. Forms of government which lie between these two have received the various names of aristocracies, oligarchies, &c., but no one has yet succeeded in explaining what an aristocracy is, or to what portion of a community political power must be limited in order to constitute an oligarchy.

DEMO'CRITUS was born at Abdera in Thrace, or, according to some, as we learn from Diogenes Laertius (ix. 34), at Miletus, in the year 460 B.C. He was thus 40 years younger than Anaxagoras, and eight years younger than Socrates. He received his first lessons in astrology and theology from some Magi, who had been left with his father by Xerxes when passing through Abdera to the invasion of Greece; and he is said to have been afterwards a hearer of Leucippus and Anaxagoras. That he heard Anaxagoras is doubtful, but, if he did, it must have been while Anaxagoras was at Lampsacus; for when this philosopher was banished from Athens (450 B.C.) Democritus was only ten years old. Democritus appears to have been a great traveller. He is said to have visited Egypt, that he might learn geometry from the Egyptian priests; to have been in Persia, and with the Gymnosophists in India, and to have penetrated into Ethiopia. He sojourned for some time at Athens; but from contempt of notoriety, as it is said, was known to nobody in that city. It is for this reason that Demetrius Phalereus, as cited by Diogenes Laertius (ix. 37), contended that Democritus had never visited Athens. One result of his extensive travels was, that he expended all his patrimony, which is said to have exceeded 100 talents. Now, it was a law of his country, that any one who spent his whole patrimony should be refused burial in his native land; but Democritus, having read his chief work aloud to his fellow-citizens, so impressed them with an admiration of his learning, that he not merely obtained a special exemption from the above law, but was presented with 500 talents, and was, on his death, buried at the public expense. (Diog. Laert. ix. 39.) A story substantially the same, though varying somewhat in detail, is given in Athæneus (iv. p. 198). He is said to have continued travelling till he was 80 years old. He died in the year 357 B.C. at the age of 104. There is a story of his having protracted his life for three days after death seemed inevitable, by means of the smell of either bread or honey, and in order to gratify his sister, who, had he died when first he seemed likely to die, would have been prevented from attending a festival of Ceres. (Diog. Laert. ix. 43; Athæn. ii. 7.)

Democritus loved solitude, and was wholly wrapt up in study. There are several anecdotes illustrative of his devotion to knowledge, and his disregard of everything else. They conflict somewhat with one another in their details; but accuracy of detail is not to be looked for, and, tending all to the same point, they prove, which is all that we can expect to know, what character was traditionally assigned to Democritus. Cicero (*de Fin.* v. 29) speaks of him as, like Anaxagoras, leaving his lands uncultivated, in his undivided care for learning; while, as an instance of how these stories conflict, Diogenes Laertius represents him as having, on the division of the paternal estate with his two brothers, taken his own share entirely in money, as being more convenient than land for a traveller. Valerius Maximus (viii. 7) makes him show his contempt for worldly things by giving almost the whole of his patrimony to his country. He is said too to have put out his eyes, that he might not be diverted from thought; but Plutarch (*de Curiositate*, p. 521, C) rejects this story, and explains how it might have arisen. It was Democritus who, struck with the ingenuity displayed by Protagoras in the tying up of a bundle, raised him from the humble condition of a porter, and gained him for philosophy.

Democritus followed Leucippus at a very short distance of time, and preceded Epicurus by somewhat less than a century, as an expounder of the atomic or corpuscular philosophy. [Atom.] He viewed all matter as reducible to particles, which are themselves indivisible (hence called *atoms*), and which are similar in form. He included mind under the head of matter, recognizing only matter and empty space as composing the universe, and viewed mind as consisting of round atoms of fire. (Aristot. *de Anim.* 1, 2.) Arguing that nothing could arise out of nothing, and also that nothing could utterly perish and become nothing, he contended for the eternity of the universe, and thus dispensed with a creator. He further explained the difference in material substances (mind, as has been said, being one of them) by a difference in the nature and arrangement of their component atoms, and all material (including mental) phenomena by different motions, progressive or regressive, straight or circular, taking place among these atoms and taking place *of necessity*. Thus the cosmology of Democritus was essentially atheistic.

In psychology he explained sensation, as did Epicurus after him, by supposing particles, *εἴδωλα*, as he called them, or sensible images, to issue from bodies. He also thought to explain men's belief in gods by the supposed existence of large images of human form in the air. In moral philosophy he announced nothing more than that a cheerful state of mind (*εὐεστώ, εὐθυμία*) was the one thing to be sought after. The manner in which the follies of men affected him, and from which he derived his name of the 'laughing philosopher,' is well known. (Juv. x. 33—55.)

A list of the very numerous writings of Democritus is contained in Diogenes Laertius (ix. 46—49). They are arranged under the five principal heads of ethics, physics, mathematics, general literature, and arts; and there are besides a few of miscellaneous character. The list, classified in the same manner, and enriched with critical remarks, is given in Fabricius (*Bibliotheca Græca*, ed. Harles. vol. ii. p. 634—641). The reader will see in this work a list of the writings wrongly attributed to Democritus, and statements of the grounds on which they are severally pronounced spurious; among them are the writings on magic which are spoken of by Pliny (*Hist. Nat.* xxx. 1), and considered by him as genuine.

For an account of the philosophy of Democritus the reader is referred to Hill, 'De Philosophia Epicurea, Democritea et Theophrastea,' Genev., 1669; Ploucquet, 'De Placitis Democriti Abderitæ,' Tübing. 1767; Cudworth's 'Intellectual System,' chap. i.; and to the common histories of philosophy; and for general information concerning his life to Bayle's 'Dictionary,' and Fabricius' 'Bibliotheca Græca,' ed. Harles. vol. ii. p. 628.

DEMOISELLE. (Zoology.) [Gruidæ.]

DEMOIVRE, ABRAHAM, was born at Vitry in Champagne, on the 26th of May, 1667, and was descended of an antient and honourable family of the French Protestant church. The revocation of the edict of Nantes in 1685 compelled him to leave his native country, and, like a great number of the refugees created by that revocation, he settled in England, choosing for the field of his efforts the metropolis.

He appears at the earliest period to which any account of him reaches to have devoted himself to teaching mathematics, as the surest means of obtaining a subsistence. He also, though he was not the first who adopted that plan, read lectures on natural philosophy: but it does not appear that his attempts in this way were very successful, he being neither fluent in the use of the English language, nor a good experimental manipulator.

The popularity, as a book to be talked about, of Newton's great work, compelled Demoivre to enter upon the study of it; and there is no doubt that he was one of the few who at that time were able to follow the illustrious Newton in the course of his investigations. Demoivre's power, however, lay in pure mathematics of the kind now called analytical; for in all his writings there is scarcely a trace either of physical or geometrical investigation to be discerned. His writings on analysis abound with consummate contrivance and skill; and one at least of his investigations has had the effect of completely changing the whole character of trigonometrical science in its higher departments. [TRIGONOMETRY.]

At a comparatively early period of his residence in London he was admitted to the society of Newton and his immediate circle of personal friends; and many instances of the regard with which he was treated are current amongst the traditions which have reached our own time. This of course led to an intimacy with the leading mathematicians of that period; and his great talents soon obtained his election into the Royal Society, as well as, ultimately, those of Paris and Berlin. The estimate formed of his abilities, acquirements, and impartiality, is proved by his being nominated as a fit person to decide on the rival claims of Leibnitz and Newton to the invention of the method of fluxions.

Demoivre lived to the advanced age of more than eighty-seven; but as he outlived most of his early associates and friends, his circumstances became greatly reduced. He is said to have sunk into a state of almost total lethargy, the attacks of which often lasted for several days; and his subsistence was latterly dependent on the solution of questions relative to games of chance and other matters connected with the value of probabilities, which he was in the habit of giving at a tavern or coffee-house in St. Martin's Lane. He died on the 27th of November, 1754.

Demoivre's writings, we have already remarked, are distinguished by considerable originality of character. His separate publications are as follows:—

1. Miscellanea Analytica, de Seriebus et Quadraturis, 1730, 4to. This work contains several very elegant improvements in the then known methods of termination of series, as well as some new methods.

2. The Doctrine of Chances, or the Method of Calculating the Probabilities of Events at Play, 1718, 4to. This work was dedicated to Sir Isaac Newton: it was reprinted in 1738, with considerable alterations and additions. A third edition was afterwards published, differing little in anything of consequence from the second.

3. Annuities on Lives, 1724, 8vo. A work on the same subject, published by the distinguished Thomas Simpson, in 1742, in which some well-deserved compliments to De moivre were introduced, led our author to publish a second edition of his work; and it is to be regretted that he was induced to insert some harsh reflections on Simpson's work, which were as unfounded as they were uncalled for by the manner in which Simpson had treated his predecessor's first edition. Simpson, however, replied to it in an appendix to his work in the following year, 'containing some remarks on a late book on the subject, with answers to some personal and malignant representations in the preface thereof.' The only excuse that can be urged for Demoivre in this matter is, that he was an old man, that he considered the domain his own, and Simpson as a mere poacher on it, and that he was under the influence of men who wished to crush the rising genius and talents of a man like Simpson, who had not been born to the advantages which enabled him to obtain a regular academical education. Demoivre, notwithstanding his age, had the good sense to see that he had attacked a man with whom he could not cope; but still pride prevented his making any apology to his younger competitor. In 1750 he published a third edition of his work, in which he merely omitted the offensive reflections of his former preface; and here the dispute seems to have terminated. Demoivre also published a considerable number of papers in the 'Philosophical Transactions.' There is not one of these which is not of sterling value on the subjects of which they treat.

DEMOIVRE'S HYPOTHESIS. An hypothesis on the duration of human life, formed by Demoivre, as he informs us in the preface of his Treatise on Annuities, some years after the publication of the first edition of his Treatise on Chances, on the inspection of Halley's Breslaw Tables. Observing that the decrements of life at the middle ages were very nearly uniform, Demoivre made an extension of this law to the whole of life, not thereby intending to assert that any such principle was correct for childhood and old age, but simply that the effect of the error upon the value of annuities at the middle ages of life would be trivial. The hypothesis is as follows:—*of eighty-six persons born, one dies every year, till all are extinct.* The remainder of eighty-six years, at every age, Demoivre called the *complement of life.* The half of the complement of life is the average duration (commonly called the expectation); and the peculiarity of Demoivre's hypothesis is, that, according to it, every person has an even chance of living the average time of people of his age, which is not true of other tables. The Northampton Tables certainly do nearly coincide with this law at the middle periods of life, but the Carlisle and most other tables differ materially from it. Thus at twenty years of age, according to the Carlisle Tables, the *average duration* is to the age of sixty-one and a half, while each individual aged twenty *has an even chance* of living to be about sixty-five years of age.

The following table (left hand) shows the number of persons out of ten thousand who may be expected to die in the year next following their attaining the age marked in the first column, according to this hypothesis, the Northampton and Carlisle Tables, and the Belgian Tables of M. Quetelot:—

Age.	Hypothesis.	Northampton.	Carlisle.	Belgian.
10	132	92	45	88
20	152	140	71	120
30	179	171	101	126
40	217	209	130	144
50	278	284	134	183
60	385	402	335	325
70	625	649	516	680
80	1667	1343	1217	1425

Age.	Hypothesis.	Northampton.	Carlisle.
10	19·9	20·7	23·5
20	18·5	18·6	21·7
30	16·8	16·9	19·6
40	14·8	14·8	17·1
50	12·5	12·4	14·3
60	9·7	9·8	10·5
70	6·4	6·7	7·1
80	2·3	3·8	4·4

The second table shows the values of annuities on lives of the ages in the first column, at three per cent., in years' purchase. Practically speaking, then, the celebrated Northampton Tables agree with Demoivre's hypothesis in their money results, though by no means exhibiting the same physical law of life.

It must be observed of Demoivre's hypothesis, that any one which supposes uniform decrements throughout is entitled to the name, whether the limit of life be eighty-six years or not. Conformably to this view, the modification which best represents the Carlisle Tables would be, that, of 128 persons born, one dies every year; a supposition which would be as much in excess on one side, for old lives, as that of eighty-six is in defect, but which would represent the Carlisle Tables from twenty to fifty years of age as well as the use of eighty-six does the Northampton Tables.

DE'MONA, VAL DI, one of the three old divisions of Sicily, which comprised the north-east part of the island, is now divided into the two intendenza, or provinces of Catania and Messina. A great part of the Val di Demona is occupied by the mass of Ætna. Near the north coast, and parallel with it, is a continuation of mountains, of which Mount Madonia, the antient Nebrodes, near Cefalu, and Mount Dinamari, near Messina, are the highest summits. The Val di Demona is the most woody part of all Sicily. Besides the extensive forests which encircle Ætna, there is near the north coast a large forest, which, under the names of Bosco di Caronia, Bosco di Castro, and Bosco di Cutò, extends more than 20 miles in length from east to west. The boundaries of the Val di Demona were, to the south, the river Giarretta, which divided it from Val di Noto, and, to the west, the small river Della Rouella, which separated it from the Val di Mazzara. The district of Cefalu, which is the most western part of the Val di Demona, forms now part of the intendenza or province of Palermo. [ÆTNA.]

DEMONSTRATION. The old use of this word has been alluded to in the life of COPERNICUS. It meant any manner of *showing* either the connexion of a conclusion with its premises, or that of a phenomenon with the asserted cause. Thus we find it asserted by an early writer that the system of Copernicus, *though false*, gave *truer* demonstrations of the celestial motions than any other: meaning that those motions could be more easily shown to be a necessary consequence of the hypothesis cited than of any other. It is very important, in reading the old English writers, to remember this use of the term.

Demonstration now means only that process by which a result is shown to be a necessary consequence of the premises from which it is asserted to follow, on the supposition that those premises are admitted, either as matter of fact, or of intuitive evidence, or of previous demonstration. Thus the 47th proposition of the first book of Euclid demonstrates a certain property of a right-angled triangle, on the supposition—1, that all the preceding propositions are true; 2, that the axioms used in geometry, whether expressed or implied, are true also. It makes the consequence as certain as the premises, by means of the indubitable character of the connecting process. This strict use of the term demonstration belongs to the science of logic, which is the art of demonstrating from premises, without reference to the truth or falsehood of the premises themselves.

But in common life the word demonstration means any sort of reasoning which the party using the term chooses to call proof. 'I consider it as demonstrated,' means the same thing as 'evidence has been offered which makes it so probable to me that I am willing to act upon that evidence.' Most minds have no idea of a middle state; they either absolutely receive or absolutely reject: so that in fact demonstration comes with any degree of balance of evidence on one side or the other. It is easy to admit that in common life high probability is the ground of assent, and that it never can be otherwise: but there is mischief in the use of the same term both for logical inference and for its mixture with matters of guess or feeling, or unassisted perception. The logician might consent to abandon the word demonstration for popular use, and to adopt another: but it would result, that the new word, whatever it might be, would immediately be seized by those who confound what is commonly called argument with what is actually demonstration. Whatever may be the strongest term in use, it will be adopted by strong assertors: nor will he who has shown probable reason, however great, for the adoption of a result of argument, be satisfied unless his conclusion be received as *certain*. What we have here said refers entirely to the use of the word demonstration: the fallacy to be feared is the placing in the result of it, in one sense, the degree of confidence which is only obtained by confounding that sense with another. Two parties, both convinced that a conclusion has a high degree of evidence, dispute whether the evidence *amounts to demonstration*. To settle this point, they sift the evidence most minutely, and perhaps entirely forget to inquire whether they mean the same thing by the word demonstration.

DEMONSTRATIONS, in military affairs, are operations of any kind which may be performed for the purpose of deceiving the enemy respecting the measures which it is intended to employ against him.

They consist in displaying an apparent activity in forming or repairing a road, or in sending provisions or stores to a particular place, as if preparatory to a march of troops in that direction; in marking out ground as if for an encampment; and in detaching bodies of troops to make false attacks. Such demonstrations are made chiefly with a view of inducing an enemy to divide his forces, and thus weaken his line at points against which the real movement or attack is intended to be directed.

In order to succeed, however, in these demonstrations, they should be made with great precaution, that they may have every appearance of indicating a serious enterprise: even the troops who are to execute them should be unacquainted with the object in view, lest a deficiency of energy should betray the secret to the enemy, who must be supposed to be on his guard against such attempts, and who may consequently take measures to render them useless.

DEMO'STHENES was born probably about B.C. 384, Ol. 99. 1. He was the son of Demosthenes, an Athenian citizen of the demus Pæania, who carried on the trades of cutler and cabinet-maker, and of Cleobule, the daughter of Gylon. This Gylon, who had been governor of Nymphæum, an Athenian settlement in the Tauric Chersonesus, betrayed it to the Scythians, and, afterwards taking refuge with their chief, married a Scythian woman, who was the maternal grandmother of Demosthenes. This impurity of blood and the misconduct of Gylon, his maternal grandfather, formed a theme for the taunts of Æschines. (*Oration against Ctesiphon.*) There is a well-known allusion in Juvenal to the trade of Demosthenes the elder (x. 130):

> 'Quem pater ardentis massæ fuligine lippus,
> A carbone et forcipibus gladiosque parante
> Incude et luteo Vulcano ad rhetora misit.'

The point of the satirist is however somewhat lost, when we remember that Plutarch applies to the father a term (καλοκἀγάθος) which expresses all that can be said to the advantage of a man, and that he had two manufactories (ἐργαστήρια) containing on the whole more than 50 slaves. (Creuzer, *View of Slavery in Rome*, note 40, and the *Orations of Demosthenes against Aphobus*.)

Demosthenes the elder died when his son was seven years old, leaving him and a sister, younger than himself, to the care of three guardians, Aphobus and Demophon, his first cousins, and Therippides, a friend. The property left by him amounted to 15 talents, above 3000*l*. in specie, taking silver as the standard. The guardians, however, as we learn from Demosthenes himself, disregarded all his father's injunctions, and, while they neglected to improve the property of which they were trustees, embezzled nearly the whole of it. (*Orations against Aphobus.*) Plutarch states that they also deprived Demosthenes of proper masters. He himself, however, in a passage where it is his object to magnify all that concerns his own history, boasts of the fitting education which he had received. (*Orat. on the Crown*, p. 312.) He is said to have studied philosophy under Plato, and to have been a pupil of Eubulides of Miletus.

Having heard Callistratus plead on one occasion, he was fired by that orator's success with ambition to become an orator himself, and he accordingly received instructions in the rhetorical art from Isæus. Cicero (*De Oratore* ii. 94) mentions Demosthenes as one of those who came forth from the school of Isocrates: Plutarch, on the other hand, expressly states that he was not a pupil of Isocrates, and goes out of his way to invent reasons why Demosthenes should have preferred the instructions of Isæus. We assume however that Isæus was his principal instructor, in accordance with the testimony of the various biographers. (Libanius, Zosimus.) We are told that many suspected the speeches against his guardians to have been written, while others said that they were corrected, by Isæus, partly because Demosthenes was so young when they were delivered, and partly because they bore marks of the style of Isæus. He is said to have taken lessons in action from Aristonicus, a player.

The physical disadvantages under which Demosthenes laboured are well known, and the manner in which he surmounted them is often quoted as an example to encourage others to persevere. It should be observed, however, that the authority for some of these stories is but small, and that they rest on the assertions of writers of late date. He was naturally of a weak constitution: he had a feeble voice, an indistinct articulation, and a shortness of breath. Finding that these defects impaired the effect of his speeches, he set resolutely to work to overcome them. The means which he is said to have taken to remedy these defects look very like the inventions of some writer of the rhetorical school, though Plutarch (*Demosth*. x.) quotes Demetrius the Phalerian as saying that he had from the orator's own mouth what Plutarch has stated in the chapter just referred to. Among these means we hear of climbing up hills with pebbles in his mouth, declaiming on the sea shore, or with a sword hung so as to strike his shoulder when he made an uncouth gesture. He is also said to have shut himself up at times in a cave under ground for study's sake, and this for months together.

Having been emancipated from his guardians, after a minority of ten years, he commenced a prosecution against them to recover his property. Estimating his losses at 30 talents (inclusive of ten years' interest), he sued Aphobus for one-third part, and gained his cause, without however succeeding in obtaining more than a small part of his money. This took place B.C. 364, when he was in his 20th year, or, as he says himself (*Mid.* 539, § 23), when he was quite a boy; but the extant orations against his guardians are evidently not the work of a youth of that age, as a careful perusal of these orations will clearly show. He subsequently adopted the profession of writing and delivering, as a hired advocate, speeches for persons engaged in private and public causes—a practice which was now generally adopted by the Greek orators, and was attended with considerable profit. His first speech on a public occasion was made in 355 B.C., in which year he wrote the speech against Androtion, and wrote and delivered that against Leptines.

Of his speeches relating to public concerns, there are three which have a direct bearing on his personal history: the speech against Midias, that concerning Malversation in the Embassy, and that in behalf of Ctesiphon, or, as it is commonly called, the 'Oration on the Crown.' The two last are briefly noticed under the article Æschines. [ÆSCHINES.] With reference to the first, it should be premised that, in the year 351 B.C., Demosthenes voluntarily undertook the expensive office of Choragus, and that, during the performances at the Dionysia, when discharging his duties, he was insulted and struck by Midias. Demosthenes brought an action against Midias for assaulting him in the performance of what was regarded as a religious duty, and thus Midias was involved in a prosecution for sacrilege. Demosthenes obtained a verdict. The extant oration against Midias was written three years afterwards.

The first speech on a public affair that remains, and probably the first which Demosthenes published, is that on the Symmoriæ, which was delivered B.C. 354. A few words will be necessary to explain the state of parties at the time.

About ten years previous to this oration the power of Sparta had been broken by Thebes, who in her turn sank into inactivity after the death of her great general Epaminondas in the battle of Mantinea, B.C. 362; three years after this time Philip of Macedon began his reign. His first step, after defeating two other claimants to the throne and compelling the Pæonians and Illyrians to submission, was to possess himself of several Greek colonies to the south of Macedonia, and to interfere in a war of succession then going on in Thessaly. Athens, not yet recovered from the effects of the Peloponnesian war, had been engaged from 357 to 355 B.C. in a war with her allies, Rhodes, Chios, Cos, and Byzantium, which ended in their throwing off the yoke under which she had held them, about a year before the delivery of the oration on the Symmoriæ. There were, as usual, two parties in Athens. With one of these, which was headed by Phocion, Philip had an intimate connexion, and this party was not unfavourable to his designs, either through want of energy, or from believing that they would do Greece no injury. The other party, called by Mitford 'the War Party,' was headed by a profligate general named Chares, and was that to which Demosthenes was afterwards attached.

Perhaps the most important event of the time was the war occasioned by the seizure of the temple of Apollo at Delphi by the Phocians. There had been a dispute as to the sacred land, which had long belonged to Phocis, and the Amphictyonic council asserting their claim, Philomelus the Phocian seized the temple, and its treasures were freely used in the war, which continued till 346. It was through this war that Philip contrived to identify his interests with that of the Amphictyons at large, and at last to be elected their leader, and hence we must generally consider the leading parties in the struggle between Philip and Demosthenes to have been the Amphictyonic states and Macedon on the one side, against Athens and occasionally Persia on the other; while we must remember that in Thebes, the principal Amphictyonic state, there was a strong party against Philip, as in Athens there was one equally strong for him.

Under these circumstances, Demosthenes made his oration on the Symmoriæ, which in part relates to a question of finance, but more particularly to a scheme then on foot for sending Chares with an armament into Asia against the Persians; a project utterly preposterous, as Athens had enough to do to hold her ground against the refractory colonies and subject states, without engaging in other undertakings. Against this measure Demosthenes directed his eloquence with success, and this may be considered the beginning of his struggle with Philip, for the Macedonian cause would have gained by any loss which Athens might sustain. About a year after, Philip began to take an active part in the affairs of the Sacred War, as that in Phocis is usually called. He defeated the Phocian alliance, and only retired, as it should seem, to avoid any rupture with Athens, such as might preclude all hope of adding her to the number of his auxiliaries. At this juncture Demosthenes, who had been opposed to the former war, joined Chares, and delivered his first Philippic.

The motive of this apparent change of opinion is evident: on the former occasion, he saw that war would have been the dispersion of strength which was needful for a nearer struggle; now, he saw that the time for that struggle was come, and knew that, to be effectual, Athens must direct it. (*Oration on the Crown*, p. 249.) But Athens, however powerful when roused, had lost much of that spirit of individual bravery which characterized her in the best times of her history. The exhortations of Demosthenes failed in producing the desired effect; nor was it till Philip had defeated Kersobleptes the Thracian, whom it was the interest of the Athenians to support as his rival, that they considered themselves compelled to commence military operations against him.

This was at last done by sending successive expeditions to Olynthus, a maritime town near the isthmus of Pallene, and by an inroad into Eubœa, under the direction of Phocion, by means of which the Macedonian influence was lessened in that island. The former step was however the more important, as Olynthus was a place of strength, and was looked on with great jealousy by Philip.

Olynthus had made alliance with Athens contrary to a compact with Philip, and although well enough supplied with arms and men, it required the assistance of Athenian soldiers. To provide for these expeditions, Demosthenes, in his Olynthiac orations, advised the application of the money appropriated to the public festivals, and in so doing was opposed by Phocion: this has been made a subject of petty attack by Mitford, who believing the oration περὶ Συντάξεως to be genuine, accuses Demosthenes of inconsistency, as in that oration the speaker opposes a similar measure. And yet taking Mitford's own ground, we should rather admire the steadiness of purpose which made him oppose his own friends when he thought it for the public good, and the discrimination which told him that the time and opportunity for effort were now come.

In spite however of the exertions of Demosthenes, Olynthus was taken by Philip in the spring of 347 B.C., and we may here remark, that the frequency of failure in action against an enemy who was constantly outdone in negotiation, is only to be accounted for by the fact, which Mitford notices, of the decline in personal bravery in a nation long used to conquest.

Early in the succeeding year Demosthenes, with Æschines and eight or nine others, went on an embassy to Philip, to treat of peace. According to Æschines, he exhibited great want of self-possession on this occasion. If this were the case, it is surely not too much to attribute it to a consciousness that he had departed through fear of present danger from his one great object of opposition to Philip, who, even during the settlement of preliminaries, seized on several Thracian towns. The motive which urged Demosthenes to agree to a peace is probably that assigned by Schaumann (see also Demosth. *Orat. on the Peace*), that the means of resistance were too small to allow any hope that Athens alone could use them effectually. Be that as it may, Demosthenes never slackened his efforts, and in 343 B.C. we find him accusing Æschines of malversation in the former embassy, and acting as one in a second to counteract Philip's influence in Ambracia and Peloponnesus. Since the cessation of the Phocian war in 346 B.C., this influence appears to have increased, as well by the weakening of Sparta and Thebes, as by his acquisition of two votes in the Amphictyonic council; hence the renewed energy of Demosthenes and the expedition of Diopeithes to the Hellespont, for the purpose of protecting the Athenian corn trade. (*Orat. on the Crown*, p. 254.)

About this time too Demosthenes became in a more decided sense the leader of his party, in the room of Chares, and for the next two years employed himself in supporting and strengthening the anti-Macedonian party in Greece. His principal measures were an embassy to the Persians; the strengthening of the alliance with Byzantium and Perinthus for the purpose of forming alliances; and the relinquishment by Athens of all claim on Eubœa, in which Phocion concurred.

The struggle now began. Philip laid siege to Perinthus, to Selymbria, and afterwards to Byzantium, and fitted out a fleet. At this juncture, Demosthenes delivered his fourth Philippic, in which, among other things, he recommended the restoration of the festival-money to its original use, alleging the scruples felt by some concerning its application to military purposes, and the increase in revenue which rendered that application no longer necessary. In 339 B.C. the siege of Byzantium and Perinthus was raised, and a short peace ensued; but in the succeeding spring Philip was chosen Amphictyonic general. The object of Demosthenes was now somewhat changed. Before, he had to oppose a foreign influence which sought to insinuate itself into the affairs of the Grecian States; now that wish had been gained, and his business became that of arranging party against party in the different sections of the same nation.

From this time to the battle of Chæronea he was engaged in negotiations to detach different states from the Amphictyonic alliance. At Thebes he was completely successful: a strict alliance was concluded between Thebes and Athens, and Demosthenes became almost as much the minister of the one state as of the other. He defeated all the counter efforts of Python, Philip's agent, and procured the preparation of an army and fleet to act against Philip, who had seized and fortified Elatea, a principal town in Phocis. But his hopes were again destroyed at the battle of Chæronea, in the summer of 338 B.C., and Philip remained apparently master of the destinies of Greece; perhaps not unaided in the conflict by a superstition which considered his cause as in some sort identified with that of Apollo, the Delphian god. Under these circumstances, the party of Phocion made some faint attempt at action; but Philip, with his usual remarkable policy, forestalled them by releasing his Athenian prisoners and using his victory with the greatest moderation.

Demosthenes joined in the flight from Chæronea, not without some disgrace, and does not again appear till the funeral ceremony for those who fell, when he pronounced the customary oration (which, however, has been decided not to be that which goes under this name), and resumed his place at the head of the government. He became victual-provider for the city, superintended the repairs of the fortifications, and was proceeding with his usual vigour in prosecuting his political schemes, when news came that Philip had been assassinated, July, 336 B.C. The conduct of Demosthenes on this occasion, as reported by Plutarch and Æschines, has sometimes furnished a subject for strong animadversion. He is said to have appeared in a white robe, although his daughter was just dead; and he or his friends proposed honours to the memory of the assassin of Philip. As to the first of these charges, it may be said in his defence, that it only indicates how completely devoted he was to the cause of his country, even to the exclusion, in a great degree, of private affections.

Mitford has devoted a section to anecdotes of his favourite character, Philip, whose merits no admirer of Demosthenes would wish to depreciate, the chief glory of the great Athenian orator and statesman being, that he made head so successfully against such an opponent. It is the habit of party writers to ascribe unbounded virtues or to withhold all kind of praise, with equal want of reason. The history of the times of Philip and Demosthenes, by Mitford is one of the strongest examples of this habit that we can refer to.

On the accession of Alexander, Demosthenes persevered in his decided opposition to Macedon. Alexander's first employment, after his election as stateholder by the Amphictyonic league, was to quell an insurrection in the northern and western provinces of Macedonia. While he was absent, a report of his death was spread at Thebes, which revolted from the confederacy. Demosthenes (Plutarch) fanned the flame of this insurrection, and, on Alexander's sudden appearance before Thebes, Demosthenes was appointed to confer with him; but he went only to the borders of Attica. As Alexander demanded his person immediately after the destruction of Thebes, together with nine other Athenians, on the pretext of trying them as traitors, it is most probable that, when he was sent on the mission to Thebes, he had reason to fear some act of violence if he put himself in the power of Macedon. Demades, a man as high in point of intellect as he was debased in morals, was the negotiator in his place, and by some means or other contrived to save Demosthenes. If, as Plutarch relates (*Life of Phocion*), a bribe was given to Demades to persuade him to exertion in behalf of Demosthenes, it only reflects shame on the receiver, and does not seem to implicate Demosthenes in any such charge of meanness as Mitford has made against him. (xliv., § 3.)

During Alexander's Persian expedition, Demosthenes had to sustain an attack from his old rival Æschines. He defended himself from the charges brought against him [ÆSCHINES] in the oration called that 'On the Crown.' But we hear little of him as a public man. He probably considered that, at a time when the chief enemy of the liberties of Greece was employed in schemes most likely to conduce to her welfare, from the ruinous effect they promised to produce on the strength of Macedonia, any measures likely to recall Alexander from Asia would only be the means of binding still faster those chains which it had been his own constant aim to loosen.

The only affair of moment in which Demosthenes was at this time engaged was occasioned by the treachery of Harpalus, one of Alexander's generals, who had been left governor of Babylon when Alexander proceeded on his Indian expedition. Harpalus, having grossly abused his trust, fled to Europe on the return of Alexander, accompanied by 6000 Greek soldiers. He came to Athens as a suppliant, and engaged the orators to support him. All but Demosthenes espoused his cause with readiness, and he at last concurred, not without suspicion of bribery. (Plutarch.) The Athenians, however, refused to listen to his proposal of organizing a movement against Alexander, and prosecuted Demosthenes for recommending measures not for the good of the state. He was fined 50 talents by the Areopagus, and, being unable or unwilling to pay this sum, retired to Ægina and Trœzene, where he remained from 324 B.C. till the death of Alexander, which occurred in the following year. Immediately on the news of that event, he renewed his opposition to Macedon, even before his recall, which Plutarch says was owing to this conduct.

During the Lamian war he presided at Athens, and when Antipater defeated the confederate Greeks, and marched upon the city, Demosthenes, as the prime mover of the confederacy, judged it prudent to withdraw to Calauria, a little island opposite Trœzene, where he took refuge in a temple of Poseidon. Macedonian messengers were sent to persuade him to accompany them to Antipater, but he resisted all their entreaties. Plutarch, from whom this account is taken, says, that he retired into the inner part of the temple under pretence of writing a letter, and while there took poison, and died before he could get out of the temple. Another and much more probable account, which Plutarch also gives as coming from one of Demosthenes' friends, is, that 'by the singular favour and providence of the gods he was thus rescued from the barbarous cruelty of the Macedonians;' in other words, that he died of some sudden attack brought on by the anxiety and disappointments of the last few weeks of his life.

Demosthenes seems to have been actuated all through his political life by the strongest passion to promote the interests of his native state; and if he only delayed the fate of his country, he did what no one else seems to have attempted. It is the highest praise of his prudence and foresight that all his political predictions were verified; as he distinctly foresaw, it was the influence of Macedon, and not internal dissension, which destroyed the sovereign and independent political communities of Greece. Those who expect to find in his style of oratory the fervid and impassioned language of a man carried away by his feelings to the prejudice of his judgment, will be disappointed. He is said not to have been a ready speaker, and to have required preparation. All his orations bear the marks of an effort to convince the understanding rather than to work on the passions of his hearers. And this is the highest praise. Men may be *persuaded* by splendid imagery, well-chosen words, and appeals to their passions; but to *convince* by a calm and clear address, when the speaker has no unfair advantages of person or of manner, and calls to his aid none of the tricks of rhetoric,—this is what Cicero calls the oratory of Demosthenes, the ideal model of true eloquence. (*Orat.* c. 7.) Most of the speeches of Demosthenes on political affairs, as we now possess them, are laboured compositions, which have evidently been frequently corrected by the author before he brought them into that state in which they now appear. Notwithstanding the easy flow of the language, the art and industry of the orator are visible in almost every line; and in nothing are they more apparent than in the admirable skill by which he makes almost every period produce its effect, and in the well-judged antithesis which gives such force and precision to his expression, that it seems as if no other words and no other order of words could be so appropriate as those which he has chosen. The style of many of the orations on civil matters which were delivered before the courts of justice is very different: there is an air of easy negligence about them, and an absence of that laboured accuracy which characterizes his other compositions. It is not unusual to find sentences that might be called grammatically incorrect. But these orations are invaluable as specimens of what we now call stating a case, and well worth the attentive study of those who would make themselves acquainted with the social condition of Athens at that time.

The orations of Demosthenes may be divided into two great classes, political and judicial, and this last again into those delivered in public and those in private causes.*

Those of the first class which are extant were delivered in the following order:—The oration on the Symmoriæ, B.C. 354; for the Megalopolitans, B.C. 353; the 1st Philippic, B.C. 352; for the Rhodians, B.C. 351; the three Olynthiacs, also called the 2nd, 3rd, and 4th Philippics, B.C. 349; the 5th Philippic (which forms part of the 1st in our present copies), B.C. 347; the 6th Philippic, also called the oration on the Peace, B.C. 346; the 7th Philippic, B.C. 344; the 8th Philippic, also called the oration concerning Halonnesus, B.C. 343; the 9th Philippic, also called the oration on the Chersonesus, the 10th and 11th Philippics (also called the 3rd and 4th), all in B.C. 341; the 12th Philippic, also called the oration against the Letter, B.C. 339; the Funeral oration, B.C. 338; and the oration on the treaty with Alexander, after B.C. 334. Of these, that concerning Halonnesus, the 11th Philippic, also called the 4th, and that against the Letter, are decided to be of doubtful authority, as is also the oration on the Contribution (περὶ συντάξεως), which is of doubtful date, that on the treaty with Alexander, and the Funeral oration.

Of the 1st division in the 2nd class, we find those against Androtion and Leptines, B.C. 355; that against Timocrates, B.C. 353; that against Aristocrates, B.C. 352; that against Midias, B.C. 348; that on Malversation in the Embassy, B.C. 343; that against Neæra, about B.C. 340; that against Theocrines, after B.C. 336; the two against Aristogiton, after B.C. 338; that on the Crown, B.C. 330. Those who are curious respecting the date of the last-mentioned orations, may refer to Clinton (*Fasti Hellen.*, p. 361), from whom these dates are taken.

Of the 2nd division are the three against Aphobus, the two against Onetor, and that against Callippus, all in B.C. 364; those against Polycles, and on the Naval Crown, after B.C. 361; that against Timotheus, before B.C. 351; that against Euergus and Mnesibulus, after B.C. 356; that against Zenothemis, after B.C. 355; those against Bœotus and for Phormio, B.C. 350; the two against Stephanus, before 343 B.C.; that against Bœotus about the dowry B.C. 347; that against Pantænetus, after 347 B.C.; that against Eubulides, after 346 B.C.; that against Conon, after 343 B.C.; that against Olympiodorus, after 343 B.C.; that in the cause of Phormio, after 336 B.C.; that against Dionysodorus, after 331 B.C. To these must be added, that against Apaturius; that in the cause of Lacritus; that against Nausimachus and Xenopithes; those against Spudias, Phænippus, Macartatus, Leochares, Nicostratus, and Callicles. Of these in the second class doubts are entertained regarding the authenticity of those against Neæra, Theocrines, Aristogiton, Onetor, Timotheus, Euergus and Mnesibulus, Stephanus, Eubulides, Phænippus and Nicostratus; but of these Schaumann decides for those against Timotheus and Eubulides.

The orations of Demosthenes were edited ten times in the sixteenth century, and twice in the seventeenth. They have been re-edited by Taylor, Reiske, the Abbé Auger, Schaefer, and Bekker. The text of Bekker, which is now the standard, is founded on a careful collation of the MSS. Those who are admirers of the greatest orator of antiquity, and of the greatest of all ages, ought to feel under obligations to this distinguished philologist for purging the text from the wild conjectures of Reiske and others, and giving us the genuine readings of the best MSS. Of separate orations, F. A. Wolf has given an edition of that against Leptines; Rüdiger of that on the Peace, of the first Philippic, and the three Olynthiacs; Buttmann and Blume of the Midias; and Voemel of the Philippics.

The orations of Demosthenes and Æschines were translated into German with notes, by J. J. Reiske, Lemgo, 1764; a correct, but tasteless version. The political speeches were translated with notes, by Fr. Jacobs, Leipzig, 1805-8; and the eleven Philippics, by Alb. Gerh. Becker, Halle, 1824-26. There are also other German translations of some of the speeches. There is a French translation of Demosthenes and Æschines by Auger. Leland has translated into English all the orations which refer to Philip, including the Philippics and Olynthiacs, with the oration of Æschines against Ctesiphon, and one by Dinarchus, but with no great success. To express the simplicity, perspicuity, and force of the original, would require the translator to possess powers the same in kind as those which Demosthenes himself possessed, and near them in degree.

(Mitford's *Greece*; Schaumann's *Prolegomena to Demosthenes*; Plutarch's *Demosthenes*; *Life* by Zosimus of Ascalon; *Lives of the Ten Orators*; Taylor's *Life of Demosthenes*; Clinton's *Fasti Hellenici, and the Orations of Demosthenes.*)

Bust of Demosthenes, Townley Gallery, British Museum. Height, 1 foot 8½ inches.

DEMOUSTIER, CHARLES ALBERT, a French writer, born at Villers-Cotterets in the year 1760. He was connected on his father's side with the family of Racine. The work which chiefly brought him into notice was his 'Lettres à Emilie sur la Mythologie.' These letters are written in a pleasing style, and attained that popularity which is usually awarded to works on learned subjects, when written in an amusing manner. Indeed it appears to have gained more than its just meed of applause, and the consequence was, that when this had subsided, a re-action took place, and the work was censured with too much severity. His other works are chiefly theatrical; of these 'Le Conciliateur,' a comedy in verse, was one of the best and most successful; there is not much humour in it, and scarcely any delineation of character, but the plot is excellently constructed, the incidents are striking and uncommon, and the author has acquitted himself well of the difficult task of expressing moral sentiments, without being mawkish. An anecdote is told of Demoustier which proves his excessive good humour: A young man being present at the representation of one of the author's comedies, felt by no means satisfied, and requested the gentleman beside him to lend him a hollow key (whistling with a key being the French mode of expressing disapprobation); the gentleman complied with his request, and was no other than Demoustier himself. He died at the place of his birth in 1801.

DEMULCENTS are medicinal agents which have the property of protecting sensible surfaces from the action of irritating matter, by hindering it from coming in direct contact with them. They are thus distinguished from diluents, of which water may be taken as an example, which often lessen acrimony by diluting or attenuating the fluid in which it exists. When much water is present in any demulcent liquid, the action is partly that of a diluent, but the chief benefit results from the bland nature of the substance, or from its viscidity. Demulcents are either solutions, such as mucilage of gum arabic, or certain substances mechanically diffused through water or milk, such as wax, spermaceti, or suet. Their beneficial effects are greatest over the mucous surfaces with which they come into immediate contact, such as the throat, stomach, and intestinal canal, but by sympathy their soothing action would appear to be extended to the mucous surfaces of the lungs, and of the urino-genital organs. Mucilaginous substances, such as gum, are not easily digested, unless some bitter or astringent principle be taken along with them; so that demulcents pass along the intestinal canal, shielding it from irritating substances throughout its entire length, though less effectually as they proceed, and become mingled with the various secretions in their passage. They thus afford considerable protection to the inner coat of the stomach and intestinal canal against poisonous agents, and for this purpose, milk, gruel, or oil, are frequently employed, though devoid of any power to disarm the substance chemically of its virulence.

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* The distinction between public and private causes is *roughly* that which in English law exists between criminal and civil cases.

DEMURRAGE, the term used in commerce to denote the money payable to the owner of a ship on the part of the shippers or consignees of goods, as compensation for detention beyond the time stipulated for her loading or discharge, as the same is expressed in the charter-party or bills of lading. It is usual to insert in all charter-parties the number of working days allowed for the loading of the ship, and also for her unloading, and likewise the sum *per diem* which may be claimed for delay beyond those periods in either case, in addition to the stipulated freight. Sometimes the number of working days for loading and unloading are stated together, so that any delay in the one case may be compensated by greater speed in the other. When the owners of the ship enter her outwards for any port, to receive such goods as may offer, and consequently where no charter-party exists, there is no stipulation for demurrage in the part of loading, but in this case it is common to insert on the face of the bill of lading a statement of the number of days after her arrival at her destined port in which time the goods must be taken from on board the ship, and also the rate of demurrage chargeable daily for any exceeding that time. No claim for demurrage can be set up where a ship is detained by contrary winds or stress of weather, nor where the government interferes to lay an embargo, nor where the port is blockaded by a hostile force, but the claim on the part of the ship ceases so soon as the goods are shipped and the clearances are passed at the Custom-house.

DEMURRER (*demorari*, to stay) is that pleading by which a question of law is raised between the parties to a suit; the party demurring refuses to proceed with the pleadings towards an issue, and requires the judgment of the court whether, upon his opponent's own showing, sufficient statement has been made to sustain the suit. A demurrer therefore admits the truth of the opponent's allegations. (Stephen; Co. *Litt.*)

DEMUS. [ATTICA.]

DENA'RIUS, a Roman coin of silver, so called from containing ten asses. It answered to the Attic drachma. After the first Punic war, the denarius became the representative of sixteen asses, and though Augustus reduced it to twelve, it continued subsequently at the value of sixteen as low as the time of Gallienus. Pinkerton says it was worth eight-pence of our money. It was the chief silver coin in Rome for 600 years, down to the time of Constantine I.

The earliest denarii are those which have the helmeted head of Rome, the Dioscuri, or the head of Jupiter, upon their obverse. Many of them had chariots, bigæ, or quadrigæ, represented on their reverses; such coins were called *bigati* and *quadrigati*. The half of the denarius was called *quinarius*, as containing five asses; the quarter, *sestertius* as money *semistertius*, containing two asses and a half.

Many of the family Denarii, as those of the Ælian, Æmilian, Calpurnian, Didian, Fulvian, Papinian, Tullian, and numerous other families, were marked on the obverse with the numeral x; others of the same and other family coins have the x crossed by an upright or horizontal bar, sometimes taken for a star or asterisk, but clearly intended to designate the value. The denarii which went for sixteen asses sometimes continued to be marked with x, and sometimes had the numerals XVI. Akerman, in his *Descriptive Catalogue of rare and unedited Roman Coins*, 8vo., Lond., 1834, vol. i., p. 15-19, has given the actual weight of the silver denarii in Troy grains, from Pompeius Magnus to Constantinus Magnus.

The *denarii æris* or *ærei*, of copper, began with the Emperor Valerian, and were at first washed with silver. Pinkerton thinks they came in the place of the sestertius, and that six of them went to the silver denarius, as six of the later sestertii did.

The word denarius was also applied to the ordinary gold coin of Rome, the *aureus*, in the same manner as the English writers speak of the gold penny of Henry III. *Aurei denarii* are mentioned by Petronius. The denarius aureus was equivalent to 30 silver denarii. The half-aureus, in the same manner, was termed quinarius. (Morelli *Thesaur. Famil. Roman.*; Greave's *Disc. of the Roman Foot and Denarius*, 8vo. Lond., 1647; Pitisci *Lexicon Antiq. Gr. et Rom.*, tom. i., pp. 646, 647; Rasche's *Lexicon Universæ Rei Numariæ*, vol. ii., p. i., p. 138; Pinkerton's *Essay on Medals*, vol. i.)

Roman Denarii.

British Museum. Actual Size. Silver. Weight 60$\frac{6}{10}$ grains.

British Museum. Actual Size. Silver. Weight 58$\frac{5}{10}$ grains.

DENBIGH. [DENBIGHSHIRE.]

DENBIGHSHIRE, a county of North Wales, of very irregular form. It is bounded on the north by the Irish Sea; on the north-east by the county of Flint; on the east by that of Chester, from which it is separated by the Dee; on the south-east by a detached part of Flintshire, and by Shropshire, from both which it is also separated by the Dee; on the south by Montgomeryshire; on the south-west by Merionethshire; and on the west by Caernarvonshire, from which it is separated by the river Conwy. A small detached part of the county is included between Salop and Montgomeryshire. Its greatest length is from north-west (Llan Drillo Rhôs, near Little Orme's Head) to south-east, (Llan Gedwyn, on the river Tanat), 41 miles; its greatest breadth from the extremity of the county near Eaton Hall (which is in Cheshire), to the source of the Rhaiadr, which flows into the Tanat, about 29 miles. The area of the county is about 633 square miles, and the population in 1831 was 83,629, giving 132 persons to a square mile. Denbigh, the county town, is on a stream which flows into the Clwyd: it is about 180 miles from London, in a direct line north-west; 203 miles by the road through Birmingham, Walsall, Newport, Whitchurch, Wrexham, and from thence to Denbigh, either by Ruthin or Mold; 205 miles by the parliamentary Holyhead road to Llan Gollen, and from thence by Ruthin to Denbigh; or 209 miles by Shrewsbury, Ellesmere, Wrexham, and Mold.

Surface, Hydrography, and Communications.—The Hiraethog hills, which occupy the western side of the county towards Caernarvonshire, extend from the north-western extremity of Denbighshire, near Little Orme's Head, in a SSE. direction, skirting the valley of the Conwy, to which they present their steepest side; on the east side several ridges of hills varying in length from five to nine or ten miles, run out laterally from the principal range. The Hiraethog hills, with these lateral branches, form one of the most extensive and dreary wastes in the principality of Wales, stretching in length from 25 to 30 miles, from the neighbourhood of Little Orme's head to near the town of Corwen (Merionethshire), on the Dee; and in breadth, according to the extent of the lateral ridges. The general covering of these hills is heath or ling: the hollows and flats abound with excellent peat for fuel, which is so close-grained as to exhibit a polished surface when dry and cut with a sharp-edged tool. The principal summits of the Hiraethog range, in the order in which they occur, from NNW. to SSE., are, Llan Elian mountain, 1110 feet; Moel*

* 'Moel' signifies bald, crop-eared, or wanting horns: it is applied to a lofty hill bare of wood.

Cranaw, Modwl Eithin (the highest point of the range), 1660 feet; Cader Danad, and Cader Ddimel. In a branch ridge which runs from the neighbourhood of Eglws Fâch, near the Conwy, to the neighbourhood of St. Asaph, are Moel Fre Ucha,* 1234 feet, Moel Fre Issa,* 1037 feet, and Bryn-y-pin. In other branch ridges there are Moel Fodian, or Fodiar, 1260 feet, and Moel Tywysog, or Twysog, 1260 feet, both to the west of Denbigh; Bronhaulog, north-west of Ruthin, and Bronbanog, near the source of the Clwyd, 1572 feet. The eastern side of the county, adjacent to Flintshire, is occupied by part of two parallel ranges of hills, (the western range called the Clwydian hills), which commence on the coast of Flintshire, and entering Denbighshire, run southward more than 20 miles, towards the valley of the Dee, and are united by the hills, which form the northern side of that valley to the Hiraethog range already described. The whole may be considered as forming one range 60 to 65 miles long, in the form of a horse-shoe, or of the letter U, and enclosing the beautiful and fertile vale of Clwyd. The Clwydian hills and the parallel range inclose a valley watered by the river Allen (Alen or Alyn), a tributary of the Dee. The principal summits of the Clwydian range in their order from NNW. to SSE., are Craig† Arthur, Moel Arthur, 1491 feet; Moel Fammau, or Vammau, 1845 feet, and Moel Ciw. Craig Brain or Cyrn Brain, in the range parallel to and east of the Clwydian hills, is 1858 feet; and Moel Enlli, or Venlli, in a small ridge, also parallel to the Clwydian hills, and nearer to the river Clwyd, is 1767 feet. In the hills north of the valley of the Dee there is Moel Morfidd, 1767 feet. The Berwyn hills, which separate the basin of the Dee from that of its tributary, the Ceiriog, and the hills which separate the basin of the Ceiriog from that of the Tanat (whose waters flow, though not immediately, into the Severn,) occupy the southern part of the county. Cefn Ucha, in the Berwyn range south of the town of Llan Gollen, is 1316 feet high.

The waters of Denbighshire find an outlet into the sea chiefly by the Conwy, the Clwyd, and the Dee, not one of which has its æstuary within the county. The Conwy carries off the waters of the western slope of the Hiraethog hills: the Clwyd drains the country inclosed between the Hiraethog and the Clwydian hills, except a small part which is drained by the Alwen, a feeder of the Dee; the Dee receives by several tributaries the waters of the rest of the county. The Conwy is noticed under CAERNARVONSHIRE. Its Denbighshire tributaries are all small, for the hills on whose slopes they rise are near the main stream: these tributaries, following the order in which they join the Conwy, are the Serw, which flows from Llyn Serw and joins the Conwy near its source, the Clettwr, the stream from Cyrniogeu (which is perhaps the largest of these affluents, though not more than six or eight miles long), the Afon Gwch, the stream which passes Eglwys Fâch, and many other smaller streams.

The Clwyd rises near the hill Bronbanog. [CLWYD.] The width of the valley of the Clwyd allows the formation of several large affluents.

The Dee touches the border of the county four or five miles below the town of Corwen (Merionethshire), and after separating it from Merionethshire for a mile or two, quits the border and crosses Denbighshire in a winding course from west to east through the vale of Llan Gollen, passing the town of Llan Gollen and Wynnstay, the seat of Sir W. W. Wynn. A little below Wynnstay it reaches the border of the county, and turning first north-east, and then north, divides it from Shropshire, a detached part of Flintshire, and Cheshire, until it finally quits Denbighshire a little above Eaton Hall. That part of the course of the Dee which is upon or within the border of the county, may be estimated at more than forty miles; the river is not navigable till after it leaves Denbighshire. Of those feeders of the Dee which belong to Denbighshire, the Rhaiadr or Moch, the Alwen, the Ceiriog, the river which rises at Minera and passes near Wrexham, and the Alen, or Alyn, are the chief. [DEE.]

The Rhaiadr, or Moch, is a small stream which forms the boundary of Denbighshire and Merionethshire. Its length does not exceed seven or eight miles, but forms in its course the celebrated waterfall of Pistill Rhaiadr. 'It terminates,' says Mr. Pennant, whose account we copy, 'the precipitous end of a very narrow valley, and divides a bold front of the Berwyn mountains. After sliding for some time along a small declivity, it darts down at once two-thirds of the precipice, and falling on a ledge, has, in process of time, worn itself a passage through the rock, and makes a second cataract beneath a noble arch which it has formed, on the slippery summit of which a daring shepherd will sometimes terrify you with standing. The second fall reaches the bottom, and assumes the name of Rhaiadr, or the cascade. The defect of this noble fall is the want of wood.' (*Tour in Wales*, London, 1784, 2 vols. 4to., vol. ii., p. 363.) Mr. Pennant does not give the height of the fall, but in the 'Beauties of England and Wales' it is described as being in all about 200 feet.

The southern border of the county is skirted for about five miles by the Tanat, which flows by the Vyrnwy into the Severn. The Ywrch, the Cwmrhiw, and one or two other affluents of the Tanat, belong to Denbighshire, but they are small. Some small streams in the northern part of the county flow directly into the sea between the Conwy and the Clwyd. The Dolwen, the largest of these, has a course of not more than seven or eight miles.

There is in Denbighshire a navigable feeder of the Ellesmere Canal. It is taken from the Dee near Llan Tysilio, in this county, and follows the valley of that river to the neighbourhood of Ruabon (or Rhiw Abon), where there is a short railroad from the canal to Ruabon brook. The canal then turns abruptly, and crossing the river Dee, over which it is carried by the aqueduct bridge of Pont Cysylltee, runs southward to the river Ceiriog, over which it is carried by another aqueduct bridge, and thence into Shropshire. The aqueduct bridge of Pont Cysylltee is a stupendous work: it is supported by nineteen pairs of stone pillars fifty-two feet asunder, and is carried over the river at the height of 125 feet above its bed. The trough through which the vessels pass is entirely composed of cast iron plates, and is 320 feet long, 20 feet wide, and 6 feet deep. There is another large aqueduct bridge over the Ceiriog, built of stone, which is 600 feet in length, and is supported on ten arches at an elevation of sixty-five feet above the river.

Of the roads which cross Denbighshire the most important is the parliamentary mail road from London to Holyhead, the principal channel of communication between the Metropolis and Ireland. It enters Denbighshire near the village of Chirk, and runs northward to near the Dee, where it turns to the west, and passing through Llan Gollen, enters Merionethshire. It afterwards re-enters Denbighshire, which it finally quits by crossing the Conwy at Bettws y Coed. This part of the road has been much improved under the direction of the parliamentary commissioners, by avoiding steep and dangerous hills, and making a direct and commodious passage, by which the necessity of passing through the narrow and crooked streets of Llan Gollen has been avoided. The mail road from London to Holyhead, by Chester, passes through the northern part of this county near the coast: it enters it between St. Asaph and Abergely or Abergelau, and quits it at the bank of the Conwy. Denbigh, the county town, is the centre from which several principal roads run. (*Physical and Political Geography of the British Islands*, in the *Library of Useful Knowledge*; Davies's *General View of the Agriculture, &c. of North Wales*; Paterson's *Roads*, by Mogg; Priestley's *Account of Rivers, Canals, &c., in Great Britain*; Arrowsmith's *large Map of England and Wales*.

Geological character.—In describing the geological character of this county, we shall notice the principal rocks which are found in it in the order of superposition, beginning with the uppermost, the red marle or new red sandstone. This rock occupies part of the coast on the north side of the county, and skirts the Clwyd from its mouth to above Ruthin. It is found also occupying a considerable tract in the eastern part of the county, along the Dee, extending from that river to the town of Wrexham; and again it is found in the valley of the Ceiriog, near the village of Chirk. The coal-measures which underlie the red marle, and which form the coal-field of Flintshire, extend from that country into Denbighshire as far as Wrexham, and again appear in the valley of the Dee, extending from Ruabon to Chirk. Coal is dug both near Wrexham and in the neighbourhood of Ruabon. Common, cannel, and peacock coal are found in these coal-measures. The coal-measures rest on a base of shale and sandstone, answering in position and character to the millstone grit of Derbyshire: this base rises to the surface, and occupies a narrow strip of the country extending from Flintshire south-east to Wrexham, and from that town south by west to Chirk; after which it continues into Shropshire, skirting the Flintshire and Ruabon coal-fields. The shale is succeeded by carboniferous limestone or mountain limestone, which extends from the coast, in the neighbourhood of Great and Little Orme's Head (both these promontories consist of this rock), and forms part of the mass of the hills that extend from the Hiraethog hills to the vale of Clwyd. A considerable part of that vale, and the upper part of the valley of the Alen, separated from it by the Clwydian hills, are also occupied by this limestone, which extends south-east from the vale of Clwyd across the vale of Llan Gollen into Shropshire. The older red sandstone, which underlies the mountain limestone, occupies a narrow belt of the surface, skirting the district which has just been described as occupied by the limestone. The Hiraethog hills are formed principally of transition limestone. The rest of the county is occupied by the clay slates and greywacké slates, which are so abundant in Wales. (Conybeare and Phillips's *Outlines of the Geology of England and Wales;* Greenough's *Geological Map of England and Wales;* Walker's *do.*)

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* 'Ucha,' upper; 'Issa,' lower.

† Craig, i. e. Crag, rock.

The coal-mines of Wrexham and Ruabon have been already mentioned. There are some old lead-mines near Abergely, on the coast: others in the range of limestone hills which run parallel to the Clwydian Hills on the east, and others again in the neighbourhood of Ruabon. Iron ore is dug at Ruabon and in the neighbourhood of Wrexham. Slate is quarried near Chirk; millstones are procured in the hills which bound the valley of the Ceiriog, and freestone for building in various places, especially near the coal-field.

Divisions, Towns, &c.—Denbighshire, as well as the neighbouring county of Flint, appears to have been comprehended in Y. Perfeddwlad (*i. e.* the middle or inland country), one of the four divisions into which Gwynedd or North Wales was divided. This district of Y. Perfeddwlad contained five cantrefs or larger divisions, which again were subdivided into cwmwds or smaller divisions, as follows:—

Cantrefs	I., Rhyfonioc.	Cwmwds	i., Uwchaled.
„	„	„	ii., Isaled.
„	II., Ystrad	„	iii., Hiraethoc.
„	„	„	iv., Cynmeirch.
„	III., Rhôs	„	v., Uwchdulas.
„	„	„	vi., Isdulas.
„	„	„	vii., Creuddyn.
			(This cwmwd is included in the present Caernarvonshire.)
„	IV., Dyffryn Clwyd	„	viii., Coleigionn.
„	„	„	ix., Llannarch.
„	„	„	x., Dogfeilyn.
„	V., Teygengle	„	xi., Cynsyllt.
	(This last cantref forms part of the present county of Flint.)		
„	„	„	xii., Prestatyn.
„	„	„	xiii., Rhuddlan.

These districts and subdivisions have been superseded by the modern counties and hundreds, which divisions were introduced as late as the reign of Henry VIII. From the time of its coming into the hands of the English until the reign of that monarch, Denbighland was comprised in districts, governed by their own antient laws and usages, and exempt from the laws of England, because all the ordinary administrators of the English laws were the officers of particular counties. By statute however in the 27th year of Henry's reign, four new shires were formed in Wales, of which Denbigh was one: these were subdivided into hundreds; and it was enacted that the English laws should from thenceforth be in force through Wales, all laws, customs, and tenures, inconsistent therewith being for ever abolished. Denbighshire is included in the North Wales circuit.

The present hundreds are six, viz.—Bromfield, comprehending the country between the Dee and the Alyn, and including the towns of Wrexham and Holt; Chirk, comprehending all that part of the country south of the Dee; Isaled, comprehending the south-west part and extending into the centre; Isdulas, extending along the north coast and along the lower part of the valley of the Conwy; Ruthen, comprehending the north-east parts and extending into the centre; and Yale, occupying a narrow strip between the hundreds of Ruthen and Bromfield, and between Ruthin hundred and the county of Flint. The county contains one principal borough and market-town, viz., Denbigh: two market-towns, which are contributary boroughs to Denbigh, viz., Wrexham and Ruthen; one borough which has no market, Holt; and two market-towns, Llan Gollen and Llan Rwst.

Denbigh, from which the county takes its name, is situated near a stream which flows into the Clwyd. Its situation on a rocky eminence, the summit of which is crowned by the ruins of the antient castle, gives it a striking appearance. It consists chiefly of one long street, well-paved and lighted, with a few good houses, leading into a spacious market-place. The market-house and assembly-room are in the market-place. The castle is said to have been erected by Henry Lacy, earl of Lincoln, upon whom Edward I. conferred the lordship of this place upon the overthrow of David, the brother of the last prince of Wales, Llewelyn. The castle walls were of peculiar structure and extraordinary strength: the outer and inner faces were built in the usual way, and the interval was filled with rough stones of all sizes and with a grouting of hot mortar, which, on cooling, formed a mass as hard as stone. The castle was never quite finished: it is said that Earl Lacy's son got his death by falling into the castle well, and that the earl being called away on military service, never afterwards came to finish the structure. In Leland's time it was a large fortress with many towers, wards, and portcullises: over the gate was an effigy of the founder. The grand entrance to the castle, a magnificent pointed archway, with the statue of the founder in a niche over it, in tolerably good preservation, still remains: it was formerly flanked by two large octagonal towers, one of which is nearly demolished, and the other is in a very ruinous state. Earl Lacy is said by some to have walled in a village which previously existed here: by others it has been doubted whether there were any habitations on the hill before he made this inclosure, which was not exactly on the site of the modern town, but higher up the castle hill. The walls, which run round the brow of the hill, inclose a considerable area, partly used for pasture, partly as a bowling-green, and partly occupied by cottages. One of the town gates (the Burgesses Gate), defended by two towers, is tolerably perfect. The original parish church of Denbigh is at Whitchurch, nearly a mile east of the town; it is very antient, and now much dilapidated. The townspeople use as their place of worship a chapel near the castle gate, within the old town walls, once belonging to the garrison of the castle, and dedicated to St. Hilary. There was antiently a priory of the Carmelites or White Friars in the town, some remains of which yet exist.

The population of the borough of Denbigh, which extends far beyond the town, and includes most of the village of Henllan, nearly two miles off, was in 1831, 3786. There are some tanneries, and many shoes are made, which are sent to Liverpool and to the surrounding fairs and markets; but Denbigh is less a place of business than of genteel retirement. The markets are on Wednesday and Saturday, and there are five fairs in the year. There are several dissenting places of worship; two schools partly endowed, two national schools, and one other day school; two boarding schools for girls, four infant schools, and four Sunday schools: the Sunday schools contain in all 1780 children. (*Educat. Returns* for 1833.)

The borough council under the Municipal Reform Act consists of four aldermen and twelve councillors. A mayor is chosen yearly from among the aldermen or councillors. Denbigh, with its contributary boroughs, Ruthen, Holt, and Wrexham, returns one member to parliament. The number of 10*l.* houses within the borough (the boundaries of which were not altered in the Boundary Act) was, in 1831, 260, of which 96 had land attached. Denbigh is the chief place of election, and one of the polling stations for the county The Epiphany and Trinity quarter sessions are held here the other sessions and the assizes, at Ruthen. The living is a rectory in the diocese of St. Asaph, of the annual value of 445*l.*, in the archdeaconry and diocese of St. Asaph. It is in the patronage of the bishop of St. Asaph.

Denbigh was burnt during the war of the Roses by a body of Welshmen under Jasper Tudor, earl of Pembroke, half brother of Henry VI. In the civil war of the seventeenth century Charles I. took refuge here for a short time. The castle was taken by the parliamentary forces under General Mytton, A.D. 1646.

Wrexham is in the hundred of Bromfield, upon a small stream that flows into the Dee, a few miles from the west or left bank of that river, and upon a road leading from London by Birmingham, Walsall, and Whitchurch, to Holyhead. It is 179 miles from London by this road, and about 12 miles S.S.W. of Chester.

Wrexham is advantageously situated in the mining district of Denbighshire, and is one of the most important towns in North Wales. The houses are in general well-built; the streets, which are wide and generally cross each other at right-angles, are paved and lighted with gas. The church is a handsome and spacious Gothic building: it consists of a nave, two aisles, and a chancel, and is adorned with many tombs, and an abundance of grotesque carving, 'in ridicule,' according to Pennant, 'of the regular clergy, and the female religious, abbesses and nuns.' On the outside of the church is a quantity of ludicrous and gross sculpture. The tower of the church has an elevation of 135 feet, and has on three sides rows of saints in richly sculptured niches. The church was built in the room of a previous one destroyed by fire in the fifteenth century; the tower was not finished until early in the sixteenth. The town-hall is a plain brick building: there are a county house of correction, and places of worship for various classes of dissenters. There are several gentlemen's seats in the vicinity.

The town is not the seat of any particular trade or manufacture; but in the parish, which is very extensive, there are quarries, lead-mines, and collieries. The iron works have been long neglected. There are two weekly markets, on Monday and Thursday, and several annual fairs. One fair, held in March, lasts many days, and is one of the most important in North Wales: cattle and horses, Welsh flannels and other woollens, Irish linens, Manchester cotton goods, Yorkshire woollens, and hardwares from Birmingham and Sheffield, are sold at this fair. The parish, which extends into Flintshire, is subdivided into fifteen townships, and contained, in 1831, 11,521 inhabitants. The town is in the townships of Wrexham Abbots and Wrexham Regis (which contain a population of 5484), and in a small part of the township of Esclusam below. By the Reform Act, Wrexham was made a contributary borough to Denbigh. The parliamentary borough comprehends the townships in which the town stands: within the limits, there were at the time of the Boundary Commissioners' Reports, about three hundred and thirty-one 10*l.* houses. Wrexham is one of the polling places for the county, and the petty sessions for the hundreds of Bromfield and Yale are held here. There is a small theatre occasionally opened for dramatic performances, and there are races every year.

The living is a vicarage in the archdeaconry and diocese of St. Asaph, of the annual value of 746*l.*: it is in the gift of the bishop of St. Asaph.

From the education returns, it appears that there were in the parish in 1833 two infant schools, with 131 children; thirty day or boarding and day schools, with 1000 to 1100 children; and nineteen Sunday schools, with above 2000 scholars. Of the thirty day schools, six were wholly or partly supported by gift or endowment, including a grammar school, two national schools, and one on Dr. Williams's foundation.

Ruthen, Ruthin, or Rhuthyn, is eight miles from Denbigh. It is, like Denbigh, situated on the summit and slope of a considerable hill, at the foot of which flows the Clwyd. The town appears to have taken rise from the foundation of the castle, which was built by Roger Grey, to whom Edward I. granted nearly the whole of the vale of Clwyd. This castle got the name of Rhyddin, or the Red Fortress, from the colour of the stone of which it was built. It stood, not on the summit, but on the western slope of the hill, towards the Clwyd. It was so much neglected, that by the time of Henry VIII. it had become roofless, and was falling fast to decay. It appears to have been subsequently repaired, and was garrisoned for King Charles I. during the great civil war; but having been taken by the parliamentary troops under General Mytton, it was ordered to be dismantled. It appears to have been capacious and lofty. A new edifice, which from its style may be considered as a restoration of the antient castle, has been erected on the site, and is now the seat of Mr. West. The summit of the hill is occupied by the market-place, to which the principal streets lead. The county-hall or court-house is the finest building for the purpose in North Wales. The county prison is well built. The church is part (the choir) of a more spacious building, was originally the conventual church of a community of Bonhommes (suppressed A. D. 1310), and afterwards rendered collegiate. There are vestiges of the walls of the nave and a transept. The roof of the present church is admired for its curious workmanship. Part of the cloisters have been converted into a residence for the warden of Christ's Hospital: the groined arches of the entrance and of the two parlours are much admired. The free-school is a good building.

The parish of Ruthen, which is small, contained, in 1831, 1381 inhabitants; but the borough boundaries extend far beyond the town, and comprehend a considerable rural district consisting of parts of the parishes of Llan Fwrog, Llan Rhydd, and Llan Ynys, and, according to the Boundary Reports, part of the parish of Llan Fair Dyffryn Clwyd, but the population returns do not notice this. The gross population of the borough in 1831 was 3376, including the inmates of the county gaol and female prison. The number of 10*l.* houses was about 150. There is no particular trade or manufacture carried on in the town. There are two weekly markets: on Monday for corn, and on Saturday for butchers' meat; and five fairs in the year.

The corporation under the Municipal Reform Act consists of four aldermen and twelve councillors. One of the aldermen or councillors is annually chosen mayor. The elective franchise, before the Reform Act, was in the burgesses resident at the time of the issue of the writ. The assizes for the county are held at Ruthen: the quarter-sessions are held alternately here and at Denbigh. It is one of the polling places for the county.

Dr. Gabriel Goodman, whose monument is in the church, was a great benefactor to the town. He founded an hospital or alms-house for a warden and twelve decayed house-keepers, ten men, and two women. The warden and pensioners are impropriators of the great tithes of the parishes of Ruthen and Llan Rhydd: the warden appoints two curates to do the duty of these two parishes, but is expected occasionally to preach himself. He has the government of the free-school, which was also founded by Dr. Goodman, and endowed with a moiety of the tithes of Llan Elidan, to which parish, as well as Ruthen, it is free. It is accounted one of the best schools in North Wales. It contained, in 1833, forty-seven scholars. A lending library is attached to it. There were at that time in the town four other day schools, containing 141 children; besides a national day and Sunday school of forty boys and forty girls. There were three Sunday schools, containing nearly 400 children. There are meeting-houses for Independents, Wesleyan Methodists, and other Dissenters.

The wardenship of Christ's Hospital is in the gift of the dean and chapter of Westminster; the yearly income of the warden is 263*l.*, with a residence. The parishes of Ruthen and Llan Rhydd are in the diocese of Bangor, and in the peculiar jurisdiction of the bishop. There was once a house or cell of White Friars (Carmelites) here: Ruthen Mill is supposed to have been their cell.

Holt is on the river Dee, which here serves to separate Denbighshire from Cheshire, five or six miles N.E. of Wrexham. Holt took its rise from a castle founded by John, earl of Warren, who had acquired possession of the surrounding district by the murder of his ward, the son or grandson of Gryffydd ap Madog. In the civil war of Charles I. this castle was garrisoned for the king, but seized in 1643 by the Parliamentary troops. Being retaken by the Royalists, it was again besieged (Feb. 1645-6) by the Parliamentarians under Mytton, and after a gallant defence of two months obliged to surrender. There are scarcely any relics of it left, even of its foundations. The town is an irregular assemblage of streets or lanes; the main street leading down to the bridge of ten arches over the Dee, by which Holt is united to the village of Farndon. This bridge was built in 1345; there are relics of a guard-house in the middle. The chapel of Holt is a plain building in the perpendicular English style. The parish of Holt contained in 1831 a population of 1609 inhabitants; of these 1015 were in the township of Holt, which constitutes the parliamentary borough, and comprehends a large rural district round the town. There were in it only about 38 houses of the annual value of 10*l*. or upwards. The population is chiefly engaged in agriculture. There is no market, but there are two cattle fairs in the year. The living is a perpetual curacy (a dependency upon the vicarage of Gresford), in the diocese and archdeaconry of Chester, and in the gift of the dean and chapter of Winchester. It is of the annual value of 101*l*. with a glebe-house. There is a Baptist meeting-house. There were, in 1833, a free school, and three other day schools, in one of which most of the children attended on Sunday also, and a Sunday school connected with the Baptist congregation; there was a school-house building for another Sunday and daily school.

Llan Gollen stands on the right or south bank of the river Dee, and on the parliamentary mail road from London to Holyhead, 184 miles from London. The town does not possess any particular claims to notice, but the vale of Llan Gollen is interesting from its picturesque beauty and its antiquarian remains, and is much resorted to by tourists. The streets are narrow, and the houses are built of a dark shaly stone. The bridge was built by John Trevor, bishop of St. Asaph, who died in 1357; it consists of five arches, the widest not having more than 28 feet span. The river usually runs under only one arch, under which it has worn a deep channel in the hard rock which forms the bed of the river. The view through the arches upwards or downwards is extremely pleasing.

The extensive parish of Llan Gollen contains a population of 4498. Of these a considerable part are engaged in agriculture, and another considerable portion in stone quarries and lime works. Some manufactures are carried on in the parish, as of flannel, cotton goods, and earthenware; there are also iron works and collieries; the town derives considerable advantages from the influx of visiters. The market is on Saturday, and there are five fairs in the year. The Ellesmere canal passes through the parish. Llan Gollen is one of the polling places for the county.

The living is a vicarage in the diocese and archdeaconry of St. Asaph, of the yearly value of 350*l*. with a glebe-house. It is in the gift of the bishop of St. Asaph. There are places of worship for Independents, Baptists, Calvinistic and Wesleyan Methodists, and Wesleyan Methodist Reformers. There were in 1833, in the parish, one boarding and day school, and eight day schools; one of these was partly supported by three small endowments. In these schools, 105 boys and 112 girls (together 217) were taught; there were besides eleven Sunday schools, in which were nearly 1000 scholars.

In the neighbourhood of Llan Gollen are several interesting remains of antiquity. Castell Dinas Brân, whose remains nearly cover the summit of the conical hill on which it is placed, is on the north bank of the Dee just opposite to the town. It was a Welsh castle, built of the coarse stone of the country, with here and there a few freestone mouldings.

Llan Egwest, or Valle Crucis Abbey, is just within the parish of Llan Tysilio, and on the border of that of Llan Gollen. It was founded by Madog ap Gryffydd Maelor, prince of Powys, for monks of the Cistercian order. It had at the suppression a yearly revenue of 214*l*. 3*s*. 5*d*. gross, or 188*l*. 8*s*. clear. There are still some beautiful remains of the church and of a part of the abbey, the latter now converted into a farm house. A short distance from the abbey is the remainder of a round pillar, called the pillar of Eliseg, probably the most antient British inscribed pillar existing.

Llan Rwst is at the border of the county, and on the east or right bank of the Conwy, and to the right of the parliamentary road from London to Holyhead, 218 miles from London. It is situated in a pleasant vale surrounded with well-wooded hills. The houses are irregularly built, and the streets, with the exception of that in which the town-hall stands, are narrow. The church has little architectural beauty, but the interior has some curious carving, said to have been brought from the neighbouring abbey of Maenan, and there is a lateral chapel, 'the Gwydir Chapel,' built in 1633, from a design by Inigo Jones; but it is sadly neglected. (Pennant.) The bridge over the Conwy is also from designs by Inigo Jones: it consists of three arches, of which the middle one has a span of 59 feet. The tide flows up to about a mile and a half from the bridge, and in spring tides brings up boats of twelve tons. (Pennant.) The parish extends into Caernarvonshire; it contains in all a population of 3601, chiefly agricultural. There is no particular manufacture carried on; some Welsh harps were formerly and perhaps are still made here; the corn trade is considerable. The market is on Tuesday, and there are five fairs in the year. Llan Rwst is one of the polling places for the county. The living is a rectory in the diocese and archdeaconry of St. Asaph, and in the gift of the bishop of that see. The annual value is 720*l*. and there is a glebe-house. There is a chapel of ease at Llan Garmon. There were, in 1833, in the whole parish three day schools, in which above 50 children were educated, and seven Sunday schools, in which above 1000 scholars are taught. There are several dissenting places of worship, and a range of almshouses erected in 1610 by Sir John Wynne.

Maenan or Maynan Abbey near Llan Rwst was founded by King Edward I. in 1283: the Cistertian monks of an abbey at Aberconwy were transferred hither. At the dissolution, the yearly revenue of the abbey was 179*l*. 10*s*. 10*d*. gross, or 162*l*. 15*s*. clear.

Ruabon or Rhuabon (or to give the Welsh orthography, Rhiw Abon) is a village at the junction of the roads from Oswestry and Llan Gollen to Wrexham. The church is spacious, and is adorned by some elegant monuments of the Wynne family, especially one by Rysbrach, to the memory of the first Sir Watkin Williams Wynn, who died in 1747. Wynnstay, the seat of the present Sir W. W. Wynn, is at Ruabon, the entrance to the park being immediately from the village. In the parish is an antient British fortified post: the area is about four acres, and it is defended by two ramparts and two ditches; the inner rampart is a massy wall, on the top of which is a carriage drive. In the vicinity of this post, in 1161 or 62, Owain Cyfeiliog, prince of Powys, defeated the English, and commemorated his victory in a poem called *Hirlas Owain*, 'the drinking horn of Owain.' The population of the whole parish of Ruabon, which is divided into four townships, was, in 1831, 8353, of whom above 600 were employed in the collieries and ironworks: the iron ore is partly dug in the adjacent hills, and partly brought from Lancashire. The Ellesmere canal passes through the parish; and there is a railway to Ruabon brook. Although the place does not commonly rank as a market-town, a market is held every Monday. There were in the parish in 1833 four day schools (one endowed, and two partly supported by donations), affording instruction to about 200 children; and five Sunday schools, in which were about 460 or 470 scholars. There are several dissenting meeting-houses in the parish, and two sets of almshouses. There are three fairs in the year. The living of Ruabon is a vicarage in the diocese and archdeaconry of St. Asaph, of the annual value of 588*l*., with a glebe-house: it is in the gift of the bishop of St. Asaph.

Chirk is a village near the north bank of the Ceiriog, on the road from Oswestry to Ruabon and Wrexham, about five miles south of Ruabon. A mile and a half north-west of the village is Chirk Castle, the seat of Mrs. Myddleton Biddulph, built by Roger Mortimer in the thirteenth century. It is a large oblong square, built round a quadrangular court, and inclosed by massive walls strengthened by round towers at the corners: there is a fifth tower close to the entrance. The interior is handsomely fitted up, and contains, among other apartments, a gallery 100 feet long, adorned with the portraits of many public characters of the time of Charles II. From the castle grounds, which are very extensive, it is said that seventeen counties may be seen. Chirk Castle is on the site of a former one, called 'Castell Crogen.' The population of Chirk parish in 1831 was 1598: a considerable number of men are employed in coal-pits, stone-quarries, and lime-works. There are several paper-mills in the neighbourhood. There are three fairs in the year. The Ellesmere canal runs by Chirk. There are in the parish two boarding schools and one day school, containing in all 70 to 80 children; two day and Sunday schools, supported by Mrs. Biddulph, containing from 100 to 130 children; and one Sunday school, containing 30 to 40 children, partly supported by a donation from the family of the same lady. The living of Chirk is a vicarage in the diocese and archdeaconry of St. Asaph, and in the gift of the bishop of that see: the annual value is 466*l*., with a glebe-house.

Divisions for Ecclesiastical and Legal Purposes.—The county of Denbigh is for the most part comprehended in the diocese and archdeaconry of St. Asaph: a small part is in the diocese and archdeaconry of Bangor, and several parishes are in the peculiar jurisdiction of the bishop of Bangor. A very small part is in the diocese and archdeaconry of Chester. The number of parishes which are partly or wholly within the county, according to the population returns for 1831, is sixty-five, of which however five, viz., St. Asaph, Bangor-Monachorum, Bôd Fary, Erbistock, and Nannerch, rather belong to Flintshire. Of the remaining sixty, ten extend into other counties, viz., Gresford or Croes Ffordd, and Wrexham, into Flintshire; Yspytty Efan, Llan Drillo Rhôs, Llan Rwst, and Eglwys Fâch, into Caernarvonshire; Llanfihangel Glyn y Myfyr, into Merionethshire; Llan Rhaiadr yn Mochnant, into Montgomeryshire; Llan Silyn, into Shropshire; and Llan y Myneich, into Shropshire and Montgomeryshire: fifty are wholly in Denbighshire. The number of benefices is sixty-four,* being rather more than the number of parishes, for the parishes of Llan Armon yn Yale and Llan Gwm are sinecure rectories as well as vicarages; the parish of Llan Sannan is divided into two portions, one a vicarage and sinecure rectory, the other a sinecure rectory only; and the united perpetual curacies of Berse or Bersham Drelincourt and Minera, are parts of the parish of Wrexham. Of these sixty-four benefices, twenty-nine are rectories (three of them sinecures); two rectories (one of them a sinecure) united with vicarages; eighteen vicarages; twelve perpetual curacies; one chapelry; one wardenship (Ruthen); and one donative. Classified according to their value, there are six the yearly income of which is under 100*l.*, sixteen under 200*l.*, thirteen under 300*l.*, seventeen under 500*l.*, and seven under 750*l.*: of two the value is not given in the 'Clerical Guide,' our authority in this matter; and three are united with other benefices, viz., the rectory of Llan Dyrnog, with the bishopric of Bangor; the rectory of Llan Rhydd, with the wardenship of Ruthen; and the chapelry of Cyffylliog, with the vicarage of Llan Ynys. The ecclesiastical patronage of the bishop of St. Asaph in this county is very valuable: he has the right of presentation to thirty-six livings, of which twelve are of the yearly value of 300*l.*, and under 500*l.*, and six of the yearly value of from 500*l.* to 750*l.*

Denbighshire is included in the North Wales circuit: the assizes are held at Ruthen; and the quarter-sessions alternately at Ruthen and Denbigh; the Easter and Michaelmas sessions at the former, the Epiphany and Trinity sessions at the latter. Denbigh is the chief place of county election: the polling stations are Denbigh, Wrexham, Llan Rwst, Llan Gollen and Ruthen.

History, Antiquities, &c.—Denbighshire, before the conquest of South Britain by the Romans, was comprehended in the territory of the Ordovices, a powerful tribe, into whose dominions Caractacus in his last struggle against the Romans transferred the seat of war, and whose subjugation was not completed till the time of Agricola. There can be no doubt of the complete conquest of Denbighshire, as well as of the rest of North Wales by the Romans; but no trace of their dominion is found within the county at the present day, unless it be some lead-works, near Llan y Myneich: nor is it clear that any of their roads crossed it, except that which connected their stations of Varæ (Bod-fary in Flintshire), and Conovium (Caer Rhun or Caer Hen, near Aberconwy). In their division of the conquered part of the island, Denbighshire was included in Britannia Secunda. Of monuments of the time preceding the Roman conquest, may be noticed two Kistvaens or stone cells (probably sepulchral) mentioned by Camden: and perhaps the tumuli at Llan Armon yn Yale, the opening of one of which is described by Mr. Pennant. (*Tour in Wales*, London, 1784, vol. i., p. 408.) A pass through the Clwydian hills is supposed to indicate by its name (Bwlch Agricla) the route which Agricola took in his expedition against Mona. At Abergely or Abergeley on the coast, are the remains of a British post, called Coppa yr Wylfa, or the Mount of the Watch Tower; but we know not to what period it is to be referred.

When the Saxons established themselves in Britain, Denbighshire, as being on the frontier towards Mercia, one of the kingdoms of the heptarchy, or rather octarchy, established by that people, became the scene of frequent struggles. To the time of these struggles we may refer some existing monuments, as the pillar of Eliseg, noticed above in our account of Llan Gollen; and the famous dyke or ditch, called Offa's dyke, made by Offa, king of Mercia, as a barrier against the predatory incursions of the Welsh. This ditch is strengthened at intervals by small forts on artificial mounds, which mounds yet remain. The ditch is on the Welsh side of them. The dyke crossed that detached part of the county which is contained in the parish of Llan y Myneich, and entered Denbighshire by the hills on the south side of the valley of the Ceiriog. It ran (though with a somewhat circuitous course) towards the north, passing near Chirk castle and Ruabon, and so into Flintshire, thus inclosing the eastern part of Denbighshire, within the Mercian frontier. Although insufficient as a military work to keep off all ravages from the country which it was designed to protect, it was the recognized boundary of England and Wales; and heavy penalties were denounced against all Welshmen who should be found in arms on the English side. A dyke, called Wat's or Watt's dyke, equal to that of Offa in depth, though not in extent, runs parallel to it through this county. It enters Denbighshire two or three miles to the East of Offa's dyke, crosses the Ceiriog and the Dee, and runs through Wynnstay (once called Wattstay) park, past Wrexham and across the Alyn into Flintshire. It was formerly strengthened in its course by forts; the site of one of these at Erddig, between Ruabon and Wrexham, is marked by earth works and some remains of masonry.

About the year 828, Denbighshire was overrun by Egbert, king of Wessex, who had acquired for that kingdom the permanent supremacy of the Anglo-Saxon kingdoms. The incursions of the Danes prevented the Saxons from entirely subduing the antient Britons; and indeed these seem to have recovered, by the aid of the Northern Britons, the territory appropriated by Offa, whose dominions, as we have seen, included part of Denbighshire. The country thus restored to its original masters was included in Powys or Powysland, one of the subdivisions of Wales. The consolidation of the power of England under the Norman princes again subjected the Welsh to the pressure of a superior hostile power; they struggled gallantly, and the victory which Owen Cyfeiliog, who flourished in the twelfth century, obtained near Ruabon, has been already noticed. Denbighshire fell into the power of Edward I. in 1277, being ceded by Llewelyn, the last prince of North Wales, at the close of his first struggle with the ambitious and politic king of England. In the subsequent revolt of the Welsh prince and his brother David, in 1282, it reverted to its native masters, but the death of Llewelyn and the execution of David as a traitor, again and finally placed it under the English dominion.

In the insurrection of Owen or Owain Glyndwr (a descendant of the Gryffydd ap Madog mentioned above), in the civil war of the Roses, and again in the great civil war of the seventeenth century, Denbighshire became the scene of contest. In 1643 Holt Castle, which has been in the hands of the Crown, was seized for the Parliament by Sir William Brereton and Sir Thomas Myddleton, but was recovered by the Royalists. In 1645 a considerable body of Welsh and Irish Royalists under the command of Sir William Vaughan, marching to the relief of Chester, then besieged by the Parliamentarians, were attacked near Denbigh, by a detachment of the latter (1000 foot and 1400 horse), under General Mytton, and Colonels Jones and Louthian, and entirely routed; 500 horse and 400 foot were taken prisoners, 100 men were killed, and the remainder dispersed. In February 1645-6 the castles of Ruthen and Holt were simultaneously attacked by Mytton, and surrendered after a siege of two months. The conqueror then marched to Denbigh, the castle of which he besieged in July; it held out till November, when it surrendered on honourable terms. In the year 1659 Sir Thomas Myddleton and Sir George Booth made a premature attempt to restore the Stuarts. Denbighshire has not been the scene of any public event of interest since that time.

(Authorities—*Beauties of England and Wales*; *Boundary Reports*; *Population Returns and Parliamentary Returns relating to Education*; *Clerical Guide*; Pennant's *Tour in Wales*; Carlisle's *Topographical Dictionary of Wales, &c. &c.*; Mogg's *Edition of* Paterson's *Roads*; Greenough's *Geological Map of England*; Walker's *do.*; *Physical and Political Geography of the British Isles*, in the *Library of Useful Knowledge;* Conybeare and Phillips's *Outlines of the Geology of England.*)

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* This number we give with some hesitation: it is only by a comparison of the population returns with the 'Clerical Guide' that we have been able to ascertain the number.

It is well to observe that the account of Denbighshire in the *Beauties of England and Wales* is a very hasty and confused compilation, especially in the historical part.

STATISTICS OF DENBIGHSHIRE.—*Population.* Denbighshire is principally an agricultural county. Of 20,120 males, twenty years of age and upwards, residing in 1831 in Denbighshire, 10,353 were engaged in agricultural pursuits, and only 235 in manufactures or in making manufacturing machinery; about 200 of these latter were weavers of woollen goods, half of whom lived at Llangollen and Llan-Samtffraid-Glynn-Ceiriog, the rest were scattered throughout the county.

The following summary of the population, taken at the last census (1831), shows the number of inhabitants and their occupation in each hundred of the county.

HUNDREDS, &c.	HOUSES.				OCCUPATIONS.			PERSONS.			
	Inhabited.	Families.	Building.	Uninhabited.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	All other families not comprised in the two preceding classes.	Males.	Females.	Total.	Males twenty years of age.
Bromfield . . .	5,281	5,527	48	427	1,807	1,793	1,927	13,162	13,297	26,459	6,296
Chirk	2,221	2,356	3	55	1,079	581	696	6,148	5,900	12,048	2,992
Isaled	2,702	2,779	16	118	1,919	443	417	6,887	6,920	13,807	3,373
Isdulas	2,485	2,590	15	82	1,499	599	492	6,084	6,079	12,163	3,004
Ruthen . . .	2,193	2,345	17	61	1,179	535	631	5,379	5,750	11,129	2,681
Yale	744	767	1	37	393	127	247	2,013	1,837	3,850	995
Denbigh (borough)	742	786	6	52	259	400	127	1,558	2,228	3,786	779
Militia under training	..	..	..	..	..	..	..	387	..	387	..
Totals . . .	16,368	17,150	106	832	8,135	4,478	4,537	41,618	42,011	83,629	20,120

The population of Denbighshire at each of the four enumerations was as follows:—

	Males.	Females.	Total.	Inc. per Cent.
1801	..	..	60,352	..
1811	..	..	64,240	6·44
1821	37,785	38,726	76,511	19·10
1831	41,618	42,011	83,629	8·69

An increase is here seen between the first and last periods of 23,277 persons, or more than 38½ per cent., which is 18¼ per cent. below the general rate of increase throughout England.

County Expenses, Crime, &c.—The sums expended for the relief of the poor at the three dates of—

1811 were £32,427,	which was	10*s.* 1*d.*	for each inhabitant.
1821 ,, 32,658	,, ,,	8*s.* 6*d.*	
1831 ,, 35,126	,, ,,	8*s.* 5*d.*	

The sum expended for the same purpose in the year ending March, 1836, was 30,204*l.*; and assuming that the population has increased at the same rate of per-centage since 1831 as in the ten years preceding that period, the above sum gives an average of 6*s.* 10¾*d.* for each inhabitant. All these averages are below those for the whole of England and Wales.

The sum raised in Denbighshire for poor's-rate, county-rate, and other local purposes, in the year ending 25th March, 1833, was 44,668*l.* 4*s.*, and was levied upon the various descriptions of property as follows:—

	£.	s.
On land . . .	39,163	15
,, dwelling-houses . .	4,553	4
,, mills, factories, &c. . .	367	19
,, manorial profits, navigation, &c.	583	6
	44,668	4

The amount expended was:—

For the relief of the poor .	36,815	5
In suits of law, removal of paupers, &c.	1,108	9
For other purposes . .	6,689	1
Total .	£44,612	15

In the returns made up for the subsequent years, the descriptions of property assessed for local purposes are not distinguished. The sums raised in the respective years ending March, 1834, 1835, and 1836, were 41,531*l.* 16*s.*, 41,242*l.* 8*s.*, and 39,461*l.* 19*s.* The expenditure was as follows:—

	1834.		1835.		1836.	
For the relief of the poor	£33,135	15	31,668	0	30,203	11
In suits of law, removal of paupers, &c., .	1,440	5	832	4	857	12
For other purposes .	7,139	0	8,946	15	8,123	0
	£41,715	0	41,446	19	39,184	3

The saving effected in the sums expended for the relief of the poor in 1836, as compared with the expenditure of 1834, is therefore 2,932*l.* 4*s.*, or nearly 19 per cent.: including the other two items the whole amount of saving is reduced to 2,531*l.*, or rather more than 6 per cent.

The number of turnpike trusts in Denbighshire, as ascertained in 1834, was six; the number of miles of road under their charge was 165; the annual income arising from the tolls and parish composition was 4,034*l.* 5*s.* 4*d.*, and the expenditure was 3,906*l.* 1*s.*

The county expenditure in 1834, exclusive of the relief for the poor, was 5,253*l.* 17*s.* 11*d.*, disbursed as follows:–

	£.	s.	d.
Bridges, buildings, and repairs, &c. .	887	16	3
Gaols, houses of correction, &c., and maintaining prisoners, &c. . .	677	5	2
Shire halls and courts of justice—building, repairing, &c. .	292	15	0
Prosecutions . . .	1,153	1	11
Clerk of the peace . . .	347	5	8
Conveyance of prisoners before trial .	80	19	2
,, of transports . .	111	19	3
Constables—high and special .	18	2	0
Coroner	92	12	0
Debt, payment of, principal and interest	1,219	12	1
Miscellaneous . . .	372	9	5
Total .	5,253	17	11

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were 141, 150, and 270; making an average of 20 annually in the first period, of 21 in the second period, and of 38 in the third period. The number of persons tried at quarter-sessions in each of the years 1831, 1832, and 1833, in respect to which any costs were paid out of the county rates, were 13, 10, and 12 respectively. Among the persons charged with offences there were committed for—

	1831.	1832.	1833.
Felonies . . .	12	9	11
Misdemeanors . .	1	1	1

The total number of committals in each of the same years was 14, 18, and 13, respectively; of whom

	1831.	1832.	1833.
umber convicted was .	11	15	6
„ acquitted .	3	2	5
arged by proclamation	0	1	2

e assizes and sessions in 1835, 50 persons were
with crimes in Denbighshire; out of which number
committed offences against the person, 9 of which
nmon assaults; 6 were charged with offences against
, committed with violence, and 25 for offences
property, committed without violence. Of the re-
6, there were 3 committed for poaching, 2 for
to aid peace-officers, and 1 for sending a threaten-
r. Of those committed, 31 were convicted, and 19
d, or no bill found against them. Of those con-
were transported, 25 were imprisoned, 22 of them
onths or under, 1 was fined, 1 whipped, and 1 dis-
on sureties. Of the offenders, 47 were males, and
s. Among the whole number, 14 could read and
could read only, and 16 could neither read nor
he degree of instruction of 1 was not ascertained.
portion of the offenders to the population in 1835,
1673.

umber of persons qualified to vote for the county
s in Denbighshire is 3538, being about 1 in 24 of
le population, and rather less than 1 in 6 of the
pulation above 20 years of age, as taken at the
f 1831. The expenses of the last election of county
s to parliament were to the inhabitants of the
107*l.* 18*s.* 10*d.*, and were paid out of the general
ate.

are two savings-banks in this county. The number
itors, and amount of deposits on the 20th November,
33, 1834, and 1835, respectively, were:—

	1832.	1833.	1834.	1835.
of depositors .	331	945	1011	1104
of deposits	£9432	28,919	30,952	32,690

arious sums placed in the savings-banks in 1834
were distributed as under:—

		1834.		1835.	
		Depositors.	Deposits.	Depositors.	Deposits.
xceeding .	£20	510	£3,825	598	£4,389
„	50	318	9,420	311	9,320
„	100	116	7,924	126	8,744
„	150	46	5,720	37	4,341
„	200	15	2,510	26	4,298
bove	200	6	1,553	6	1,598
		1,011	£30,952	1,104	£32,690

tion.—The following particulars are obtained from
mentary enquiry on education made in the session
—

	Schools.	Scholars.	Total.
chools	8		
of infants at such schools; ages to 7 years:—			
Males . . .		59	
Females . .		72	
Sex not specified		187	
			318
hools	141		
of children at such schools, ages to 14 years:—			
Males . . .		2355	
Females . .		1909	
Sex not specified		1166	
			5,430
Schools . .	149		
otal of children under daily instruction .			5,748
Schools	211		
of children and others at such , ages from 4 to 10 years:—			
Males		4,783	
Females . . .		4,154	
Sex not specified		11,836	
			20,773

ing that the population between 2 and 15 years
ased in the same ratio as the whole of the popu-
tween 1821 and 1831, and that it has continued to
(1834) this return was made in the same uniform
ncrease, there must have been living in Denbigh-
,892 persons between those ages. A very large number of scholars attend both daily and Sunday schools. Twenty-four Sunday schools are at places where no other schools are established, and therefore the scholars attending them, 1756 in number, cannot be supposed to attend any other schools. But at all other places the pupils of the Sunday schools have likewise the opportunity of resorting to the daily schools; of what number duplicate entry is thus made cannot be ascertained. Of fourteen schools, which are both daily and Sunday, and which contain 764 scholars, duplicate entry is known to have been made. Besides this cause of uncertainty as to the exact number of children under instruction, most of the Sunday schools consist of adults and aged persons, as well as children, rendering the number of the latter much less than the total number of scholars as given in the return. We may therefore conclude that not nearly the whole of the children between the ages of 2 and 15 are receiving instruction in this county.

Maintenance of Schools.

Description of Schools.	By endowment.		By subscription.		By payments from scholars.		Subscrip. and payment from scholars.	
	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.
Infant Schools	—	—	—	—	7	194	1	124
Daily Schools	23	988	13	889	97	3116	8	437
Sunday Schools	4	219	199	20,129	2	110	6	315
Total.....	27	1207	212	21,018	106	3420	15	876

The schools established by Dissenters, included in the above statement, are:—

	Schools.	Scholars.
Infant Schools	—	—
Daily „	8	302
Sunday „	154	14,411

The schools established since 1818 are:—

Infant and other daily schools	70	2,000
Sunday Schools	174	15,404

Twelve boarding-schools are included in the number of daily schools as given above. No school in this county appears to be confined to members of the established church, or of any other religious denomination, such exclusion being disclaimed in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists. Lending libraries of books are attached to five schools in Denbighshire.

DENDER. A river in Belgium, which takes its rise in the province of Hainault, about five miles north of Mons, and near the small town of Leuze. Its course is first north-north-west to Ath, where it turns to north-north-east, and enters the province of East Flanders, near Grammont: it passes through the towns of Ninove and Alost, and unites with the Scheldt at Dendermonde about fifty-two miles from its source. The Dender is navigable as far as Ath, forty miles from its mouth, to effect which object some works have been executed between Alost and Dendermonde.

DENDERAH, the Tentyra of the Greeks and Romans, a ruined town of Upper Egypt, near the left or west bank of the Nile, and nearly opposite Keneh, is celebrated for its temple, which is the best preserved and one of the most splendid in all Egypt. Its remains occupy a vast extent of ground, and consist of various buildings and propyla, besides the temple itself. They are enclosed, with the exception of one propylon, within a square wall, the side of which is 1000 feet, and built of sun-dried bricks. The wall is in some parts 35 feet high and 15 feet thick. Dr. Richardson, who has given a description of this temple, as well as Belzoni, Hamilton, and others, assigns its erection to the period of the Ptolemies. The handsome portico in front is formed of 24 columns ranged in four rows, with quadrangular capitals, having a colossal head of Isis, or, as some say, of Athor, on each side, surmounted by another quadrangular member, each face of which contains a temple doorway with two winged globes above, and other decorations. (*British Museum, Egyptian Antiquities*, in the *Library of Entertaining Knowledge.*) The shafts of the columns are perfectly cylindrical and of equal diameter all through, and the whole height, including the base, the quadrangular capital, and dé above that, is 46.10 English feet. The front is adorned with a beautiful cornice and a frieze covered with figures and hieroglyphics, over the centre of which the winged globe is predominant. On all the walls, columns, architraves, and ceiling, there is no where a space of two feet that is not covered with some figures in basso-relievo of human beings, animals, plants, emblems of agriculture, or of religious ceremonies. The interior chambers of the temple are likewise covered with sculptures, among which the figure of Isis is repeated in numberless instances, as she appears to have been the presiding deity of the place. The light in the chambers comes in through small holes in the wall; the sanctuary itself is quite dark. The ceiling of the portico is occupied by a number of mythological figures, among which the French savans thought they recognised the signs of the zodiac; but Dr. Richardson observes that the number is incomplete, as the Crab is wanting, and he, with other recent travellers and archæologists, is of opinion that it is no zodiac, but a collection of mythological emblems, without any reference to astronomy. On the east side of the temple there are some apartments, both on the ground floor and upper story. On the ceiling of one of the latter, under the roof of the temple, there was another assemblage of mythological figures resembling those on the ceiling of the portico, though fewer in number and differently arranged. This was called a planisphere or zodiac, because in the middle of it figures similar to the signs usually adopted to represent the 12 constellations were observed. 'The ceiling is encompassed with three broad circular lines, and it is only the central space that is occupied with this mythological table, which appears as if supported by twelve figures, four females, one above each angle of the room, and the other eight distributed in pairs between, and having hawks' heads. In the middle of this assemblage of emblems are certain figures, which have been taken for the signs of the zodiac, ranged in a sort of circular order, but without any regularity of distance. The lion, the bull, and the vase-carrier are exactly above three of the female figures that extend from three of the corners of the room to support the tablet with their heads; Scorpio, for the sake of regularity, should have been above the head of the fourth female figure, but it is not, neither is Libra. Capricornus, Sagittarius, Scorpio, and Libra are all crowded without any regularity into one division, and instead of the Crab we have a broad-backed spider.' Richardson (*Travels along the Mediterranean and parts adjacent, in* 1816-17, from which we have just quoted) observes that he compared the figures of the temple of Denderah with the engravings in the French work on Egypt, and found the latter a very incorrect representation. His opinion, with respect to this pretended zodiac, is the same as that concerning the one in the portico, namely, that it is not meant for a zodiac, but is a congregation of gods and goddesses and religious processions.

These zodiacs of Denderah have given rise to a warm discussion connected with the truth of the Mosaic history of the world. Dupuy and other French writers have assumed, from the relative position of these zodiacal signs and their connexion with the precession of the equinoxes, that the astronomical observations upon which these zodiacs were constructed must refer to a date far more antient than that recorded for the Deluge, or even the creation of man; not less, indeed, than 15,000 years, according to some calculations. According to Littrow and others, however, the date would only be 3228 years old. But there is, as we have observed, another opinion, strongly supported by Letronne, Halma, Champollion, and others, discarding altogether the notion of these ceilings of Denderah being intended as representations of the zodiac, or being in any way connected with astronomical observations. Those who may wish to examine the grounds of this controversy may consult the writers already quoted, and especially Letronne, 'Observations sur l'Objet des Représentations Zodiacales qui nous restent de l'Antiquité,' 8vo. Paris, 1824; N. Halma, 'Examen et Explications des Zodiaques Egyptiennes,' 8vo. 1822; and Supplement to do., concerning the Zodiac of Denderah; and also Visconti, Hamilton, Champollion, &c. It is now generally believed that the temple of Denderah, with its zodiacs, is not older than the period of the Ptolemies.

The so-called circular zodiac in the upper chamber of the temple of Denderah, which was sculptured on a kind of sandstone, was cut out of the ceiling by a Frenchman of the name of Lelorrain, with the permission of Mehemet Ali Pasha, and shipped for France in 1821, when it was purchased by the French government, and is now in the *Museum at Paris.*

DENDERMONDE, a town in East Flanders, the chief place of an arrondissement of the same name, is built at the confluence of the Dender and the Scheldt, about 14 English miles east from Ghent, and the same distance north-west from Brussels. The town contains 7,238 inhabitants: there are 1,014 houses, 4 churches, 5 chapels, a town-house, an hospital, a lunatic asylum, an orphan house, two convents, 14 schools, and a college. The town, which is fortified and defended by a citadel built in 1584 by the Duke of Parma, is said to have been founded in the eighth century. It was besieged by Louis XIV. in 1667, with 50,000 men, who were obliged to retire by the opening of the sluices on the part of the besieged, whereby the surrounding country was laid under water. In 1745 it fell into the hands of the French.

Dendermonde is the seat of many branches of manufacture, the most important of which are woollen cloths, hats, soap, cordage, and pottery. The surrounding country is fertile and well cultivated, and considerable business is transacted at the weekly market in grain, linseed, hemp, and oil. Many Roman antiquities have been dug up in the nighbourhood.

(Van der Maelen's *Dictionnaire Géographique de la Province de la Flandre Orientale.*)

DENDRO'BIUM, an extensive genus of East Indian epiphytes, found in the whole of the damp tropical parts of Asia, and a little beyond the tropics in Japan and New Holland, but unknown in the rest of the world. About a hundred species are enumerated by systematic writers: D. Pierardi, cucullatum, chrysanthum, aureum, fimbriatum, moschatum, densiflorum, pulchellum, nobile, and a few more, are known in the collections of this country; but a large proportion of the remainder requires to be better described and more carefully examined.

DENDROCITTA. [Corvidæ, vol. viii., p. 69.]

DENDROCOLAPTES. [Creeper, vol. viii., p. 148.]

DENDRO'COPUS. [Creeper, vol. viii., p. 148.]

DENDRO'DOA (Zool.), Mr. W. S. Mac Leay's name for a subgenus of Ascidians belonging to the aberrant group, or those which have a branchial pouch with only eight folds, the tentacula simple, and no liver.

Subgeneric Character.—(External). *Body* subcylindrical, with both orifices exceedingly minute, and situated on the apex. (Anatomical). *Branchial pouch* marked with only eight folds, and having the reticulation continuous. *Orifices* terminal. *Tentacula* simple. *Liver* none. *Ovary* unique, branched, situated beneath the mantle and the branchial pouch. (W. S. Mac Leay.)

Example.—*Dendrodoa glandaria.* The following is Mr. Mac Leay's description. *Body* subcylindrical, with a round summit. *Envelope* whitish, subpellucid, coriaceous, and smooth, having its base rough with agglutinated pebbles: internally it has a pearly lustre, and is thickest towards the base. *Orifices* so little prominent as to be scarcely perceptible without a lens; separate from each other, and opening with four indistinct rays. *Mantle* muscular, but of uniform substance.

Tentacula about twenty-six, simple, subulate, alternately long and short.

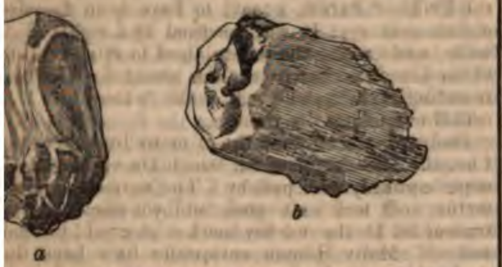
Anterior nervous tubercle with many spirals.

Branchial cavity occupying the whole length of the animal.

Pharynx situated at the bottom of the cavity of the body. *Œsophagus* descending, and turning short round near the cardia into a cylindrical horizontal stomach, which is striated internally, and occupies with the pylorus (which turns round and lies parallel to it) the whole of the bottom of the cavity. *Intestine* very long. *Rectum* ascending, almost vertical, terminated by an anus margined.

Ovary one, situated on the left side, between the branchial pouch and the tunic. It consists of a trifurcated cylindrical stem, having at the base on one side a forked branch, on the other a simple one, all of the same thickness. Mr. Mac Leay remarks that the organs of digestion have great affinity in external structure and position to those of *Cynthia pantex* of Savigny, except that the stomach and intestine are horizontal, and the anus simply margined, and that different as this species is in external appearance from all other *Ascidiæ*, internally it agrees with the *Pandociæ* in almost every essential respect but the ovary. He observes that this singular animal completes the circle of the genus *Ascidia* in the most beautiful manner. It agrees with the first subgenus, *Cynthia*, in the nature of its branchial reti-

and of its digestive apparatus; but *Cynthia* has
ies, the right one contained in the intestinal loop,
left one coating the tunic. The first of these, or
ovary, is the only one possessed by *Pandocia*, and
s the only one possessed by *Dendrodoa*. Mr. Mac
icludes by stating that the distinction between the
groups of *Ascidia* depends thus upon the nature of
tem of generation, as that which exists between
normal groups depends on their system of respira-



odoa glandaria, natural size seen on the right side. The base
vith pebbles, has the appearance of the cup of an acorn. *b*, The
obliquely, so as to show the top, which is a little compressed, and
ar points. The two lowest and largest are false orifices; the two
hich are so small as to be almost invisible to the naked eye) are
fices, the highest being the anal, and the other the branchial orifice.
cal Observations on the Natural Group of Tunicata, &c.,' by
harp Mac Leay, Esq., A.M., F.L.S., &c.; 'Linn. Trans.,' vol. xiv.,
hich the reader is referred for the magnified anatomical figures
.)

DROMUS (Zoology), a genus of rodent quad-
established by Dr. A. Smith in his 'Contributions
atural History of South Africa,' with the following
rs:—

Dental formula, $\frac{2}{2}$: molars, $\frac{3-3}{3-3} = 16$.

pper incisors with a longitudinal furrow on their
face; the lower long, slender, with the cutting
ieated.

pper first molar with six tubercles in a double row,
indistinct ones besides, of which one is at the an-
rt of the crown of the tooth, the other near another
of the internal series, behind the transverse inci-
mina; the second molar with two or three longitu-
isorial laminæ by the external margin of the crown,
iddle of which lie three or four obtuse transverse
s disposed in a row; the third molar has two trans-
isorial laminæ with an interjacent furrow. *Below*,
molar has six tubercles disposed in a double series;
ond, four obtuse tubercles arranged in the same
he third is very small, with some transverse laminæ
rows intermingled. No canines. Rostrum acute.

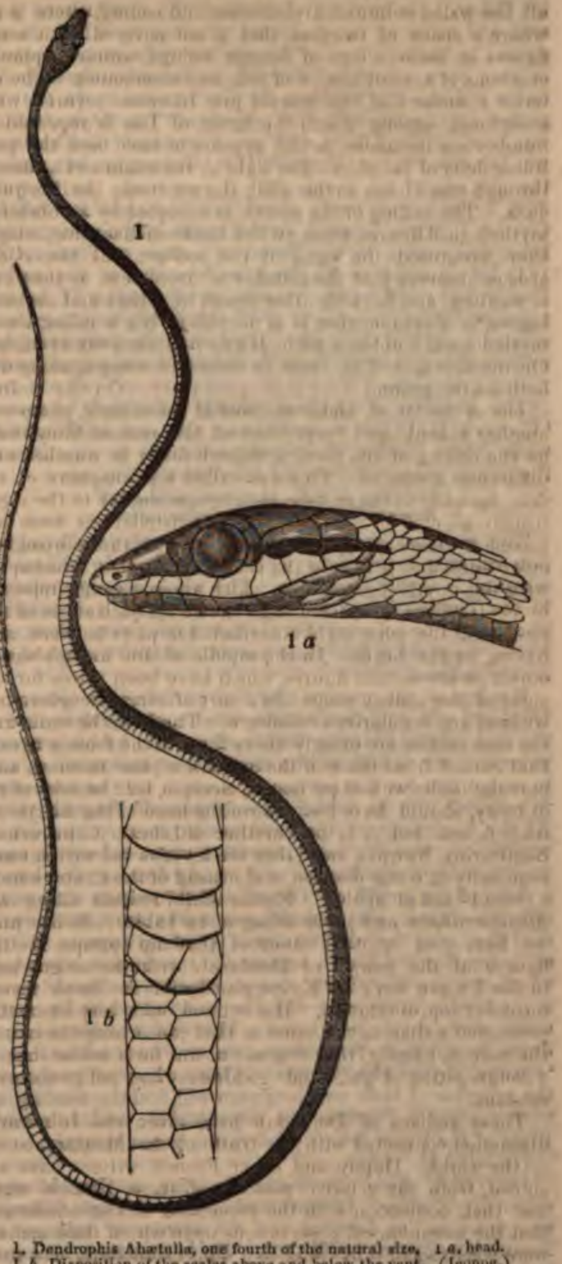
Ears oblong, rather naked, and, internally, near
ll, with two transverse membranaceous valvules, of
e lower lies over the external auditory meatus. Tail
d, annulated, with scattered hairs. Feet divided,
ory; the anterior with three toes and a wart in
allux; the posterior five-toed: claws falcular.

ple.—*Dendromus Typus*. Above, brown, passing
gineous; beneath, reddish white; whiskers long,
lack and partly white; upper lip white; ears with-
within slightly covered with a fine short white
fur; extremities the same; tail pointed, consider-
ger than the body, and of a faint grayish brown
along the centre of the back, particularly towards
an indistinct black line. Length from point of
root of tail, 3½ inches; length of tail, 4½ inches.

ity.—South Africa, upon the branches of trees, &c.,
h situations it constructs its nest and brings forth
ig. Dr. Smith observes that the position of this
imal among the family of mice is not well deter-
but that perhaps its place is after *the Mouse*. (*Zool.*
vol. iv. p. 438.)

DRONESSA. [Ducks.]

NDROPHIS, (Fitzinger), a subgenus of serpents
by Cuvier under the great genus *Coluber*, and
by him to be the *Ahætulla* of Gray. The species
genus have, like the *Dipsas* of Laurenti, a line of
cales along the back, and narrower scales along the
but their head is not larger than their body, which
slender and elongated. Their muzzle is not elon-
and they are not venomous. *Locality*, India and
[Leptophis.]



1. Dendrophis Ahætulla, one fourth of the natural size. 1 *a*, head.
1 *b*, Disposition of the scales above and below the vent. (Iconog.)

DENDROPHY'LLIA. [Madrephylliœa.]

DE'NDROPLEX, a genus of birds established by Mr. Swainson, and placed by him in the family *Certhiadæ* (Creepers), and sub-family *Certhiana*, which have the tail graduated and rigid.

Generic Character.—*Bill* very straight. *Wings* moderate, rounded; third, fourth, and fifth *quills* longest.

Mr. Swainson observes that he knows not whether the type of this genus has been described, and states that the living bird has all the manner of a *Picus*. Except in its perfectly straight bill, he adds, it differs not from *Dendrocolaptes*. (*Zool. Journ.*, vol. iii., p. 354.)

DENEB, an Arabic word, signifying the tail: it generally means the bright star (β) in the tail of the Lion. [Leo.]

DENHAM, SIR JOHN, born at Dublin in the year 1615, was son of Sir John Denham, who was some time chief baron of the Court of Exchequer in Ireland. His father being afterwards made a baron of the Exchequer in England, he was brought to London in 1617, where he received his grammatical education. In the year 1631 he became a gentleman commoner of Trinity College, Oxford, where, after studying for three years, he took the degree of bachelor of arts. He subsequently entered himself at Lincoln's Inn, studied the law pretty closely, and might have done well, had not an immoderate passion for gaming exhausted his money, and drawn on him the displeasure of his father. He however abandoned the mischievous pursuit, and wrote an essay against gaming, by which he regained his father's favour, though his reformation appears to have been somewhat feigned, as immediately after his father's death his fondness for play returned. In 1641 he gained great celebrity by his tragedy of 'The Sophy,' which was acted at Blackfriars with much applause; and his fame was increased by his 'Cooper's Hill,' written in 1643, almost the only one of his poems that is now read. In the year 1647 he performed many secret and important services for Charles I., when prisoner in the hands of the army, which being discovered, he was forced to escape to France. In 1652 he returned to England, and resided at the earl of Pembroke's; and at the restoration of Charles II. he was appointed surveyor-general of his Majesty's buildings, and created knight of the Bath. He died in the year 1688, his understanding having been for some time impaired by domestic grievances.

The admirers of Denham usually limit their praises to 'Cooper's Hill,' and some lines on the earl of Strafford; while others confine their commendations to two lines in the former poem, wherein he describes the Thames:

> 'Tho' deep, yet clear; tho' gentle, yet not dull,
> Strong without rage, without o'erflowing full.'

This is a most happy combination of words; the bringing into contrast expressions which only vary in shades of meaning is highly ingenious. The whole passage relating to the Thames is written with much spirit, and striking lines might be selected from other parts; yet, taken as a whole, the poem is heavy and purposeless, and though short, is very tedious.

Readers of the present day, on perusing the poems of Denham, will doubtless wonder what could be the cause of the high commendations bestowed on him by his contemporaries; but to look at him from a fair point of view, and to assign him his due portion of merit, it will be necessary to consider him as one of the reformers of English verse. At the beginning of the seventeenth century the art of versification was in a very imperfect state, as may be seen from reading the prologues to our early dramas; and hence a poem of the length of 'Cooper's Hill,' written with tolerable smoothness, was something remarkable. At the present day, even the versification of Denham appears faulty, as he frequently allows a sentence to run from one line into another, a practice which, though effective in blank verse, is intolerable in rhyming couplets; and indeed he has made some words rhyme in a manner that we wonder was endured by any age; for example, in one instance he makes 'sprung' rhyme with 'Rome.' Those who wish to observe the progress of their own language will find the reading of such authors as Denham not unprofitable; and Johnson's Lives of the Poets form a good running commentary.

DENHAM. [Africa.]

DENIER, from the Latin *denarius*, a French coin, originally of silver. It continued in use, through different modifications, as long as the old system of coinage in France lasted; that is, till 1795. Up to that time, accounts were kept in France in livres of 20 sous or 240 deniers: they have been since kept in francs of 10 decimes, or 100 centimes.

Under the kings of the first race the denier weighed twenty-one grains; under the second race, and in the time of Charlemagne, twenty-eight, and sometimes thirty grains; and under Charles the Bald thirty-two. At the commencement of the third race of French kings the denier weighed twenty-three or twenty-four grains of fine silver. Philip I. began the practice of mixing copper with the silver; and it is in his time that we find the distinction first made between *deniers Tournois* and *deniers Parisis*, the latter being worth a fourth part more than the former. By the time of St. Louis, 1226, the denier had become so debased as to contain not more than six grains and a half of silver; which was probably the occasion of that monarch's issuing a larger class of coins called *gros deniers d'argent*. The term denier was likewise afterwards applied to the gold money of France, in the same manner as the gold first issued by our Henry III. was termed the gold penny.

There were formerly current in France several little copper pieces, which, having no proper name, were distinguished only by their value in deniers; such were the pieces of 36, 30, 24, 18, 12, 6, 4, and 2 deniers. The pieces of 4 and 2 deniers were coined at Strasburg, for currency in the province of Alsace, pursuant to a declaration of the 6th September, 1695. Those of 6 deniers were coined in the mints of Aix, Montpelier, Rochelle, Bourdeaux, and Nantes, by an edict issued in the month of October 1709.

The deniers coined toward the end of Louis XIII. were the work of the famous Varin, and are much admired for their execution.

(Le Blanc, *Traité Historique des Monnoyes de France*, 4to. *Paris*, 1690; Furetière, *Diction. Universel*, v. *Denier*; Postlethwayt's *Dict. of Commerce*, fol. Lond. edit. 1774.)

DENIS, SAINT, a town in France, in the department of Seine, in a plain not far from the right bank of the Seine, and on the streamlets the Cloud and the Rouillon, which flow into that river: it is about 5 miles from Paris, in 48° 56′ N. lat., and 2° 21′ or 22′ E. long.

This town dates its rise from the foundation of a church erected over the tomb of the saint and martyr whose name it bears. The church of St. Denis (Dionysius) was founded, or perhaps only enriched, by King Dagobert, in the seventh century. It had been preceded by a chapel built over the tomb of St. Denis, and rendered celebrated by reported miracles. Crowds of pilgrims resorted to the chapel, and afterwards to the church, and in the course of time a village rose round the sacred edifice, which increased to a considerable town. Dagobert founded also an abbey, which he richly endowed, and on which he conferred great immunities. Upon his death he was buried in the church of St. Denis: his successors in many instances followed his example, and the church became in time the customary burial-place of the kings of France. In 832 the monks had become so corrupt that the Abbot Hilduin had to introduce a thorough reform. The abbacy was soon after put in commendam by Charles le Chauve (who reigned from A.D. 840 to A.D. 877), and was subsequently held by many laymen; but Hugues Capet (who reigned A.D. 987 to A.D. 996) restored to the monks the right of choosing their abbot. During this interval the abbey was pillaged by the Northmen. One of the subsequent abbots, Suger, served the kings Louis VI. le Gros (who reigned from A.D. 1108 to A.D. 1137) and Louis VII. le Jeune (who reigned A.D. 1137 to A.D. 1180), both as a warrior and a statesman; and the oriflamme, previously the standard borne by the abbots in their private wars, became the standard of the royal forces. Suger vastly improved the possessions of the abbey, founded many priories, which he filled with monks of St. Denis, and rebuilt almost the whole of the church in a more magnificent style than heretofore. Part of the present edifice dates from this epoch. Mathieu de Vendôme, a subsequent abbot, administered the affairs of state during the second absence of Louis IX. (St. Louis) beyond sea: the rebuilding of a portion of the church which some of his predecessors had begun, was finished by him. The first monks of St. Denis were Benedictines; but they had so many privileges and prerogatives peculiar to themselves, that they may almost be regarded as the heads of a distinct order, having many subordinate priories in different parts of France: they were besides subject to no other superior than the pope himself. They have sometimes been called Dionysians. They had the keeping of the crown, sceptre, and other ornaments used at the consecration and coronation of the kings of France. About the time of Louis XIV. the grandeur of this establishment was much impaired. It was reduced to the ordinary rank of a Benedictine abbey, its revenues were partly applied to the support of the establishment of St. Cyr [Cyr, St.], and the ecclesiastical jurisdiction which the abbot had exercised over the territory of St. Denis was replaced, except as to the abbey itself, by that of the archbishop of Paris. The abbey was finally suppressed in 1792.

The present abbey-church, built at various epochs, presents great variety of style. The western front is divided by buttresses into three compartments, which are crowned by a range of battlements. In each compartment is a wide semicircular arched doorway, the ascent to which is by a flight of steps running along the whole front. Over the centre doorway are three pointed arches as though designed for windows, but only one is used for that purpose: over the side doors two tiers of arches, chiefly pointed, but of smaller dimensions; some of them are used as windows, or have in them smaller openings for windows. The upper part of the centre compartment is occupied by the clock. The two outer compartments are surmounted by towers which differ in their architecture; both however have windows, with pointed arches, and that at the northern extremity is crowned by a tall spire. The other is crowned by something between a spire and a high ridged roof. The doors are covered with grotesque bronze figures in low relief: they were formerly gilt in or-molu.

The choir of this church contained the tombs of most of the kings of France, and of several other individuals eminent for their rank or ability, as Bertrand du Guesclin, Turenne, Montesquieu, and others. In 1793 a decree passed the convention for the destruction of the tombs of St. Denis; but it was so far moderated that a commission was appointed to preserve those monuments which should be deemed worthy of such a favour. The tombs of the kings were opened, and the bodies deposited in a common grave. The tomb of Turenne, who was buried here, was subsequently transported by order of the Directory to the Musée des Monumens François; and ultimately by Bonaparte to the church of the Hôtel des Invalides.

In 1794 it was in agitation to destroy the church of St. Denis altogether, but nothing further was done than to strip the lead off the roof. The roof was subsequently half covered with tiles in 1796; but in 1797 this reparation was stopped, and the project of destruction again agitated, but without being carried into effect. In 1799 the stained glass windows were removed. Under the consulate and the empire the church was restored; and in 1806 Napoleon issued a decree that St. Denis should be the place of sepulture of the emperors of his dynasty; that a chapter of ten canons, retired bishops, should be established, and that four chapels should be erected, three over the place where the tombs of the kings of the three races had stood, the fourth in the place destined for the burial of the emperors. In the chapels of the kings tablets of marble were to be put up, with the names of the kings whose tombs had previously occupied places in the church. Many of the royal tombs have been since replaced, and the abbey church is also adorned with paintings of historical events connected with the church, and with the statues of some of the earlier kings of France.

Next to the abbey, the most interesting object at St. Denis is the 'Institution Royale,' a school for the daughters of the members of the Legion of Honour, established in the buildings of the abbey. After the suppression of monastic institutions in France, these buildings were converted into a military hospital. Napoleon made it the place of one of the schools subsidiary to the establishment which he had formed at Ecouen, after the battle of Austerlitz, for the daughters of the members of the Legion of Honour. Upon the restoration of the Bourbons, Louis XVIII. united the institution of Ecouen to that of St. Denis, and placed them under the charge of the nuns of the 'Congrégation de la Mère de Dieu,' and fixed the number of pupils at 400. The establishment is under the direction of a lady superintendent, who has under her as assistants 37 ladies.

The trade of St. Denis is considerable. Printed calicoes and other cotton goods are manufactured: there are several establishments for washing wool and preparing it for the weaver; and others for bleaching linens, casting sheet lead, and making saltpetre, soda, and other chemical articles. There are also several flour-mills for the supply of Paris. The chief articles of trade, beside those manufactured in the place, are agricultural; corn, wine, vinegar, wood, wool, and cattle. There are several fairs in the year; three of them are held for eight or nine consecutive days, and there is one, called La Foire du Lendit, which occupies fifteen days. At these several fairs it is calculated that woollen cloths are sold to the value of 1,500,000 francs (62,000*l.* or 63,000*l.*), other woollen goods to the value of 200,000 francs (8000*l.*), linens to the value of 300,000 francs (12,000*l.* or 13,000*l.*), and cotton goods to the value of 800,000 francs (33,000*l.*), At the fair of Lendit 80,000 or 90,000 sheep are sold, which are brought from various departments, and some even from Würtemburg and other parts of Germany. The canal which communicates between the canal of the Ourcq and the river Seine joins the latter near St. Denis. There is hourly communication with Paris by voitures or carriages.

St. Denis had in 1832 a population of 9686. It is the capital of an arrondissement, containing 4 cantons, 36 communes or parishes, and (in 1832) 87,282 inhabitants. (Dulaure, *Histoire des Environs de Paris;* Malte Brun.)

DENIZEN. Denizen seems originally to have signified a natural-born subject. But now a denizen is an alien born, who has been constituted an English subject by letters of denization: he is in a kind of middle state between an alien and a natural-born subject. He may take lands by purchase, which an alien cannot; but he cannot take by inheritance, for his parent, through whom he must claim being an alien, had no inheritable blood. The issue of a denizen born before denization cannot inherit to him, but the issue born after may. A denizen cannot be a member of the privy council, or sit in either house of parliament, or hold any office of trust, civil or military, or be capable of any grant of lands, &c., from the crown. [ALIEN.]

DENMARK, or **DANMARK** (the land or Mark of the Dane), also termed the Danske Stat (the States of Denmark), is a kingdom lying, independently of its colonial possessions, between 53° and 58° N. lat., and 7° and 13° E. long. Its boundaries are, on the north, the Skager Rack, a gulf of the North Sea; on the north-east, the Cattegat, another gulf of the North Sea, which, with the Sound, separates Denmark from Sweden; on the south-east, the Ost-See, or Baltic; on the south, parts of the free states of Lübeck and Hamburg, the grand-duchy of Mecklenburg-Schwerin, and kingdom of Hanover; and on the west, the North Sea. Its colonial possessions consist of—Iceland, in the Atlantic; the Färoe islands (Faeroerne), in the North Sea; Greenland, in North America; five forts and their dependencies, on the coast of Guinea, in Western Africa; the islands of St. Croix, St. Thomas, and St. John, in the West Indies; the settlements of Tranquebar, on the Coromandel coast; the fort of Fredericsnagore, and town of Belasore, in Bengal; and the Nicobar group of islands at the entrance into the bay of Bengal.

The table in the following page presents a comprehensive view of the component parts, area, population, and principal towns of the Danish monarchy.

The subsequent details refer only to the European dominions of the Danish crown, viz., the insular portion. North Jütland, South Jütland or Schleswig, Holstein, and Lauenburg.

Continental Denmark, which may be designated the north-western peninsula of Germany, in its greatest length from north to south is about 304 miles; in its breadth it varies from about 33 to 106, the average being about 66. Its length of coast on the North Sea and Skager Rack is about 460 miles, and along the Cattegat, Little Belt, and Baltic, about 650; the whole extent of coast is accordingly not less than 1110 miles. Many parts of this long coast line are almost useless, in consequence either of the want of deep water, or of the numberless banks, bars, and islands which line it. The shores too of the islands that lie next the Baltic are so flat and irregular as to be unapproachable in most quarters by vessels which draw much water.

The surface of Denmark presents an almost uniform plain, elevated only a few feet above the level of the sea, but occasionally relieved by some small groups of hills, whose wooded summits break the monotony of the landscape, and, in combination with numerous inlets of the sea and small lakes, give the country a very pleasing appearance. The upper soil consists of a dense layer of clay or sand in most parts, mixed with gravel in some places; the subsoil is a dark blue clay (blaalaer), entirely destitute of earthy matter, but partially intersected by a fine yellow sand. In some of the islands this clay is of a reddish tint. Remains of vegetable substances, but none of any large land-animals, are found in these clays. In North Jütland, the most sterile region in Denmark, the soil lies immediately upon a bed of bog-turf covered by sand from one to three feet in depth. Sands and heaths are the characteristic features in continental Denmark; and drift-sand renders a considerable portion of the western coasts almost uninhabitable. Together with extensive tracts of moors and swamps, the inland parts of Jütland and the islands are characterized by a rich marshy loam, of which bituminous marl is the chief constituent. The surface of the islands presents partial tracts of moor, heath, and woodland; but in general the soil is fertile, and well-suited to cultivation. The component parts of the 21,472 square miles of surface of which Denmark consists, are thus subdivided:—9850 square miles of sand capable of arable cultivation, 2830 of heath, 2660 of black rich earth, 1990 of loam and marl, 1050 of meadows and swamps, 902 of marshes, 940 of woods and forests, 735 of grazing grounds, 257 of drift-sand, and 258 of lakes and streams.

Denmark possesses no mountains, but a range of hills traverses the whole peninsula from south to north, keeping

Subdivisions, &c.

Circles.		sq. m.	Population.	Chief Towns.
DENMARK PROPER.—1. Seeland, or Sjeelland, including the islands of Samsoe, Moen, &c. 2. Fyen, or Fünen; Islands, Langeland, Fyen, &c. 3. Lolland, or Laaland; island, Falster	Islands.	4,935	697,900	Copenhagen 119,290), Helsingoer. or Elsineur (7100) Roeskilde (2900), Rottum (3000). Odensee (8750). Nyeborg (2900), Assens (2330). Svenborg (3400). St. Nakskow (2200).
4. Aalberg; islands, Goel, Oeland, &c. 5. Viborg; islands, Lessoe and Fuur 6. Aarhuus; island, Anholt 7. Ribe; island, Fanoe	N. Jütland.	9,408	525,900	Aalborg (7100). Viborg (3450). Aarhuus (6800), Randers (6450). Ribe (2400), Kolding (2330), Fredericia (4200). Horsens (3500).
		14,343	1,223,800	
DUCHY of SCHLESWIG, or SLESVIG.—1, Hadersleben; 2, Apenrade; 3, Tondern; 4, Nordburg; 5, Flensburg, 6, Gottorff; 7, Hütten; 8, Husum; 9, Femern; including the islands of Fohr, Aeroe, Als, Nordstrand, and Femern.	S. Jütland.	3,444	340,500	Schleswig (11,000), Flensburg (16,500). Apenrade (3200), Hadersleben (3500). Tondern (3600), Husum (4500). Eckernförde (3500), Tönningen (2200). Friedrichstadt (2800), Sonderburg (3000).
DUCHY of HOLSTEIN, or HOLSTEEN.—1, Rendsburg; 2, Bordesholm, Kiel, and Cronshagen; 3, Ploen; 4, Cismar; 5, Neumünster; 6, Steinburg; 7, Segeberg; 8, Traventhal; 9, Reinbeck. Also the districts of North and South Ditmarsk, Rantzau, Hershorn, and Pinneberg, and equestrian districts, Itzehoe, Kiel, Preetz, &c.	German Prov.	3,223	439,900	Kiel (10,500), Rendsburg (7600). Oldesloe (1700), Plön (2600). Glückstadt (5100), Itzehoe (5000). Wandsbeck (2000), Blankäuese (2500). Altona (25,200), Barmsteidt (1600). Elmshorn (2500).
DUCHY of LAUENBURG.—Ratzeburg, Lauenburg, Schwarzenbeck, and Steinhorst, with the equestrian districts.		462	35,900	Ratzeburg (2300), Lauenburg (3400), Möllen (1750)
		21,472	2,040,000	
COLONIES. European. Iceland. Distr., North, South, & West		37,800	50,800	Reikiavig (500).
Faeroe Islands		490	6,600	Thorshavn (570).
American. Greenland		4,550	4,700	
West Indies—St. Croix St. Thomas St. John's .		174	47,300	Christiansstadt (St. Croix), St. Thomas (3000), St. John's.
Africa—Coast of Guinea, 5 forts and dependencies Asia.—East Indies. Tranquebar, Fredericsnagore, Balasore, and island of Nicobar . .		546	28,000	Tranquebar (20,000), Balasore.
		43,560		
		65,032	2,188,700	

in general near to the eastern coasts, and terminating with Cape Skagen (Skagens-Odde), the extreme point of North Jütland. Its loftiest points are the Himmelsberg, in the bailiwick of Skanderburg, North Jütland, which is 1200 feet high according to some, and 1800 feet according to others; the Dagbierg-Daas, 700 feet, in the bailiwick of Viborg, and the Askehoy, 690 feet. There is also a range of hills, called the Fyen Alps, in the island of Fyen, or Fünen, which runs from the north-easternmost point to the south-easternmost at Svenborg, bending always towards the south-western coast: its highest summit does not exceed 400 feet. The chief mass of the Seeland hills inclines towards the eastern coast, and extends from the northern mouth of the Sound to the southernmost extremity of the island: the most elevated point is the Mangelberg, near Hirschholm, to the north-west of Copenhagen, which is 560 feet in height.

The western coasts of Jütland and Holstein are quite flat, and protected from the North Sea, or West Sea as it is termed by the Danes, in contradistinction to the Ost-See (East Sea, or Baltic), by sand-hills and dykes in South Jütland, or Schleswig. The eastern coasts of Jütland, as well as the island-coasts, are abrupt and precipitous, formed of chalk or limestone, and called Klinte by the natives: the Moens-klint, on the eastern side of the island of Moens, which stretches above ten miles out into the sea, is remarkable for its fossils and numerous waterfalls. The north-eastern shores of Seeland are separated from Sweden by the Sound, or Ear-Sound, (Ore-Sund, so denominated from the resemblance of its form to the human ear), the well-known entrance into the Baltic, which is about 70 miles in length from the Swedish point of Kullen-Cattegat to Falsterboe, and 1½ mile (7986 feet) in breadth between Helsingör (Elseneur) and Helsingborg, where it is narrowest: in mid-channel it varies from 10 to 19 fathoms in depth. Between the western side of Seeland and the north-eastern side of the island of Fünen lies a second entrance into the Baltic, called The Great Belt, which is about 9 miles wide at its narrowest point between Nyeborg and Korsoer, and varies from five to twenty-five fathoms in depth, but, on account of sandbanks and rocks, is difficult of navigation for large ships. Between the western coast of Fünen and eastern coast of Jütland and the island of Alsen, or Als, is a third entrance, called The Little Belt, which is not more than three quarters of a mile, or 4100 feet wide, next Middelfahrt, where it is most confined; it is about 46 miles in length, is hazardous to navigate, and just above Middelfahrt is commanded by the fortress of Fredericia, in North Jütland.

The coast of Denmark is indented in several parts with bays and inlets, here called Fiords, or Vügen, the latter name being applied to the smaller bays. The largest of these fiords are the Ise-Fiord, on the northern side of the island of Seeland, which is connected with the Roeskilder-Fiord on the east, and the Liim-Fiord on the west; it is about 74 miles in its greatest length, and contains several islands. The Liim-Fiord, which intersects North Jütland, occupies nearly 252 square miles; the Kingköpings Fiord is to the south of the last mentioned bay; and the Apenrade, Flensburg, and Eckenförd Fiords, on the eastern coast of South Jütland.

Denmark abounds in small lakes, the most considerable of which are—the Mos See (about 5 miles long and 1½ broad), the Viborg, Skanderborg, Garboel, and Langesee, in Jütland; the Arresee, Esrumsee (celebrated for its fish, and united by a canal with the Great Belt), the Tüsse, and Lorocsee, in Seeland; the Arreskoesee in Fünen; the Marienboersee in Laaland; the Ploener and Selentersee in Holstein; and the Ratzeburgersee in Lauenburg.

As no inland point in Denmark is more than 35 or 40 miles from the sea, the country has no large rivers. The Elbe forms the southern boundary of Lauenburg, from the town of Lauenburg to the Hamburgese district of the Vierlande, and the south-western boundary of Holstein, from Altona to the Mas-Queller, where it discharges itself into the North Sea. The Danish streams which flow into it are the Delvenau, Bille, Alster, and Stoer. The largest of the navigable rivers of Denmark is the Eyder, which was considered the north-western boundary of the empire of the Franks in the days of Charlemagne, and of the German empire in after-times; it flows out of an inland sheet of water near Bördeshiolm in Holstein, passes westward through Rendsburg, and skirts Friedrichstadt, dividing Holstein from Schleswig, is navigable along nearly the whole of its course of about 105 miles, and enters the North Sea at Tönningen, at the south-western extremity of Schleswig, where it is 800 feet in width. The Trave, a Holstein river also, rises near Giselrade, flows southward through the Lauenburg and Lübeck territories, is navigable throughout the greater portion of its course of about 65 miles, receives the Steckenitz, and winding north of Lübeck, falls into the Baltic at Travemünde. The other streams which water Denmark and the adjacent islands, and to which the Danes give the name of Aae, scarcely deserve the name of rivers; the largest of them are the Gudenaae, in North Jütland, which rises in the Tyrrild Heide, in North Jütland, flows through several lakes, and enters the Cattegat near Randers; the Nipsaae, in Schleswig, which enters the North Sea at Ribe; the Schol, Wid, and Bredeaae, in the same duchy; and the Susaae, in Seeland, which flows into the sea at Nestwed.

Denmark contains four large canals. The Schleswig and Holstein or Eyder Canal, which connects the North Sea with the Baltic, was formed by rendering the Eyder navigable from Rendsburg to Kluvensik, whence the canal takes an easterly direction through the northern extremity of Lake Flembude, there crosses the range of hills which traverse the peninsula of Jütland and Schleswig from north to south, and terminates in the Kieler Föhrde, a bay of the Baltic between Kiel and Friedrichsort. Its greatest elevation above the level of the Baltic is 27 feet; its length from Rendsburg to its termination is about 27 miles; it has seven bridges and as many sluices; is 100 feet broad at the surface, and 24 at the bottom; it is 10 feet deep, and capable of receiving vessels of 150 tons burthen. Its supply of water is derived from the Flembude lake. The Steckenitz Canal in Lauenburg, which unites the Elbe with the Baltic by connecting the Delvenau with the Möllner-See, Steckenitz, and Trave, was constructed in 1390, and establishes a communication between Lauenburg on the Elbe and Lübeck on the Trave. The Daneskiold Canal, on the island of Seeland, which was constructed by Count Daneskiold Samsoe, between the years 1810 and 1812, gives access from the south-eastern waters of the Great Belt to that quarter of the island which is richest in grain and timber; it begins at Noesdybroe, near Ringstedt, and is carried for about 23 miles to Nestwed, near the Baltic shore. The Odensee Canal connects Odensee, the capital of Fünen, with the sea.

Mineral waters have been brought into use at Glücksburg in Schleswig, and at Bramstede in Holstein; and there are saline springs near Oldeslohe, in the same duchy.

The proximity of the sea renders the climate of Denmark temperate, considering its latitude. The cold is greatest in North Jütland, and least in the adjoining islands. The weather is in general very variable; rains and fogs are of constant occurrence; storms are frequent; the winter cold is not severe, but the summer heats are at times overpowering. The humidity of the atmosphere is a great advantage to a country whose soil is of so sandy a nature. The thermometer seldom ranges above 20° Reaumur (77° Fahrenheit). The barometer varies from $28\frac{1}{4}$° to 28° 6′.

The people of Denmark, with the exception of a few thousand Jews, resident in Copenhagen, Altona, and other towns, are of German descent, but of four distinct races. The Danes, who inhabit Seeland and the circumjacent islands, North Jütland, and a small portion of Schleswig, were the Normans of former times: they use a dialect of the German, and are estimated at 1,350,000: the pure Germans, who inhabit the duchies of Holstein and Lauenburg and the greater part of Schleswig, and whose numbers are computed at 650,000: the Frieslanders, who dwell along the western coasts of Schleswig and on the small islands in the North Sea: the Angles, who live between the Bight of Flensburg and the Schley on the Baltic, whose united numbers are estimated at about 70,000; and the Normans, who people Iceland and the Faeroe islands. The present population of Denmark, its duchies, and the adjacent islands, is about 2,040,000. In 1820, it was 1,662,000; in 1827, 1,932,153; and in 1833, about 2,000,000. The earliest census we possess is that of the year 1769 for Denmark Proper, which includes Jütland and the neighbouring islands: the then population was 786,000; in 1787 it had increased to 840,000; in 1801, to 926,000; in 1830, to 1,190,512; and in 1834 to 1,223,800. The duchy of Schleswig, at the beginning of 1803, contained 325,743 inhabitants, and, at the beginning of 1835, 430,258. In the same years, and at the same periods, the duchy of Holstein contained 278,341, and 332,866 respectively.

The Dane is of a strong, well-knit, muscular make; his features regular, eyes blue, and hair commonly light. 'The gift of the Dane,' says Rothe, a native writer, 'is strength, where others have inherited liberty. He is susceptible of high, strong, and enduring feelings, but he is not easily roused; he has more common sense than wit, and, being of a patient disposition, looks at every side of a question, and requires much time for deliberation.'

The population of Denmark is collected in 98 towns, 45 market-towns (all in the three duchies), and 4985 villages, besides isolated farms and dwellings. It was thus classified in the year 1834—the number assigned to each class includes children, servants, and others dependent on the principals—clergymen, schoolmasters, and other teachers, 25,549; civil officers and clerks in public offices, 30,018; scientific and literary men, artists, and students, 5,029; officers in the army and military departments, 3,783; naval officers, 937; under-officers and soldiers, 10,075; sailors in the navy, 6,036; seamen otherwise employed, 34,103; employed in agriculture, 598,558; manufacturers and handicraftsmen, 221,957; traders, 43,342; capitalists and persons living on their property, 47,568; day-labourers, 139,957; professors, 43,576; criminals, 1,470; persons whose occupations are not described, 11,742; total, 1,223,800. This return applies to Denmark and the duchies of Schleswig and Holstein only; and it is estimated that 1,100,000 of the whole of their then population were more or less dependent upon agriculture for their subsistence. The proportion of births to living individuals is 1 in 32; and of deaths to living individuals 1 in 40. The proportion of marriages to the population in the 10 years ending in 1834 was 1 to 123. On an average the issue of each marriage was $2\frac{40}{100}$ children. In the same year the town population consisted of 295,212, and the rural population of 1,234,983.

Denmark is pre-eminently an agricultural state. The most fertile parts are the islands of Laaland and Falster, and next to them Seeland and Fünen; but agriculture is not so skilfully or actively pursued in these parts as in Holstein and Lauenburg, particularly in the Northern and Southern Ditmarshes of Holstein on the Baltic coast, where the most perfect tillage in Denmark prevails. Jütland has the least productive soil of any part of the kingdom, a considerable portion of its western districts, as well as those of Schleswig and Holstein, from the Eyder to the Liimfiord, being wholly unavailable for agricultural purposes. The Danes, as agriculturists, are deficient in energy, intelligence, and thriftiness. Their backwardness in this respect arises from a variety of causes, of which the chief are, as Olufsen, one of their countrymen, remarks, that the cultivator is rarely proprietor of the soil, that he is overburthened with dues and services, that there is too great an extent of common lands, that his capital is too small, and that property is too much subdivided.

Denmark and the adjacent islands contain an area of about 21,472 square miles, or 13,742,080 acres. Of this area there have been applied to useful purposes about 16,266 square miles, or 10,410,240 acres; being nearly 76 in every 100 acres. This quantity is composed of about 8,633,600 acres of arable land; 604,800 of meadows; 470,400 of pastures, &c.; and 537,600 in woods and forests; besides about 107,520 of arable and meadow or pasture land, and 56,320 of woods, forests, &c., in the duchy of Lauenburg The average yearly produce of the cultivated soil is estimated at 300,000 quarters of wheat, 1,400,000 of rye, 4,450,000 of oats, 2,000,000 of barley, 115,000 of buckwheat, 245,000 of peas and beans, 250,000 of rapeseed, 2,200,000 tons of potatoes, 2500 cwts. of hops, and 448,000 pounds of tobacco. It is stated by Nathanson that the yearly exports of this produce, on an average of ten years (1821 to 1830), were from 900,000 to 950,000 quarters; namely, wheat, 130,000 quarters; rye, 185,000; barley, 315,000; oats, 200,000; buckwheat, 17,000; peas and beans, 14,000; and rapeseed, 70,000; besides 20,000 quarters of malt and 16,500 of meal and flour. By a return laid before parliament, the average exports of corn for the four years 1831-1834 were—wheat, 103,302 quarters; rye, 100,829; barley, 366,969; and oats, 171,954. Of the grain exported, above four-sevenths, and of the rapeseed more than four-fifths, are from the Danish duchies. As a proof that agriculture, though comparatively backward, has made considerable advances, not only in the latter provinces, but in the northern parts and islands, it may be observed that Jütland and the islands did not produce sufficient grain for their own consumption in the last century, whereas they now afford a surplus of at least 50,000 quarters for foreign markets. Much flax and hemp is also raised, but little of superior quality, and in the whole scarcely enough for domestic purposes. Denmark produces the usual kinds of vegetables; but horticulture is not carried to any extent, excepting in the vicinity of the towns, especially Copenhagen, Altona, and Glückstadt. With respect to fruit, large crops of the commoner descriptions are produced; but attention is paid rather to quantity than quality. The value of landed property in Denmark Proper (Jütland and the islands) is estimated at 316,000,000 of banco dollars (about 25,675,000*l.*)

The rearing of horses and cattle is an object of great attention. The light Danish and heavy Holstein breeds of horses are equally valuable in their way, the one for cavalry purposes and the other for draught. The Jütland breed is similar in figure and extraction to the Holstein, but has not so fine a head. The king has two large studs at Friedrichsburg and Jägerpreiss; and numerous establishments of this kind are kept up by individuals, particularly in Fünen. The whole stock in Denmark and the duchies is estimated at 550,000; and the exportations, on a ten years' average, are about 7600 annually. In 1831, as many as 12,350 were sent abroad. The rearing of horned cattle is on an extensive scale, chiefly with a view to the making of butter and cheese and salted beef. The stock of all ages is estimated at 1,607,000; and the number exported averages yearly about 23,800 oxen, 6800 cows, and 5760 calves. Of butter alone upwards of eleven millions of pounds' weight have been the annual average export of the last ten years. Cheese (about 9200 cwt. exported), lard, salt meat, hides, and skins are likewise exported in great quantities. Large flocks of sheep are kept: the best native breeds are the Eyderstedt and Frisian in Schleswig, and the Jütland race; but they are reared rather for the sake of their flesh and milk, from which last cheese is made, than for their wool. The stock is estimated at about 1,900,000, of which about 20,000 have been improved by crossing with the Merino breed. The quantity of wool annually obtained is said to be about 4,880,000 pounds' weight, and the quantity exported is about 1,080,000. Of swine, Denmark possesses three species, the best of which is the Jütland sort; their numbers are about 450,000; the annual consumption about 250,000; and the yearly export about 20,000. Poultry of all kinds are raised, particularly geese, of which about two millions are annually killed. Much honey and wax is made in Fünen, Falster, and Bornholm, and also from the bees on the heaths in the duchies of Schleswig and Holstein; but neither the one nor the other is adequate to the domestic consumption.

The fisheries form a very essential branch of national industry: the bays and inlets, and the mouths of the Danish rivers being well stocked with fish, afford abundant and profitable employment to the inhabitants in almost every part of the long line of coast. The fishing grounds of the Liimfiord, and indeed of the whole north-eastern coast of Jütland, are the most important with regard not only to the herring trade, but other descriptions of fish, such as mackerel, cod, salmon, eels, flat-fish, shell-fish, &c.: they employ upwards of 250 boats, and 1000 men belonging to the adjacent coast, besides a great number of vessels from other parts, among which are above 100 large barks, here called Quasen, which resort here from Seeland, Fünen, and Bornholm. The average annual produce of salted herrings in this quarter alone is from 40,000 to 50,000 tons, of which between 15,000 and 20,000 are exported; in some years, indeed, the catch has proved so abundant, that the export has amounted to 40,000. The herring fishery in the Great Belt gives occupation to more than 100 vessels. Oysters are in Holstein a crown monopoly, which is let for about 1200*l.* per annum. Seals are taken on the Jütland coast about Eyderstedt, and their fat is converted into oil. There is an association for the herring fishery at Altona, who are the proprietors of twenty or thirty vessels. The Danes also take an active part in the cod-fishery of the North Sea and the whale-fishery off the shores of Greenland.

The fine forests which once enriched the Danish soil have gone to decay from want of care and from wasteful consumption. This has especially been the case in Denmark Proper and the duchy of Schleswig; and Olufsen himself does not estimate their present area at more than about 840 square miles. One fourth of them is crown property. The woods stretch northward from the Schley, along the eastern coast of Jütland to the Liimfiord; there are long tracts of them also in the south-western parts of Fünen, from Bogense to Svenborg. The woods of Seeland, Falster, and Laaland are of low growth. The pine is the prevalent tree, intermixed with the beech, oak, and birch. Denmark is dependent for her supplies of timber on Norway, Prussia, Russia, and other countries, and the inhabitants are compelled, in many parts, from the positive absence of wood, to resort to any substitute, such as manure, straw, haulm, &c. for fuel. There is little inland game but what is found in the royal and other forests; but great numbers of wild waterfowl are killed on the islands along the Schleswig coasts and in other parts.

Denmark possesses no mines or metals whatever; nor any minerals of importance, except coals, freestone, and salt: the coal-pits in Bornholm have been abandoned, and there is but one saltwork, that at Oldeslohe in Holstein, which yields about 5000 tons annually. The supply of salt is drawn from Portugal, Lüneburg, &c. Amber is collected on the Hitze, a sandbank on the western coast of Jütland; it is both of the white and deep yellow kinds. Potters' and porcelain earths are also obtained. Peat is got wherever there are swamps, and every village in those parts has bog-land assigned for its supply.

In a country where agricultural pursuits create a greater demand for labour than what the population is competent to furnish, any great development of manufacturing industry cannot reasonably be looked for. In fact, out of a population of upwards of two millions, we are told that there are not above 85,000 hands engaged in large manufactures, and in mechanical employments altogether about 300,000. The Danish capital is the chief seat of manufacture, and we refer to the article COPENHAGEN for the details. Altona is next in importance: its principal productions are silk, woollen, and cotton goods, leather, soap, refined sugar, and tobacco. Lace is made on a very extensive scale in and about Tondern; and some is so fine as to be worth thirty or forty shillings a yard. There are large tobacco manufactures, but they are said not to produce more than one-eighth of the quantity consumed. The woollen manufactures, which are estimated to produce about 350,000 yards of coarse and middling cloths, are chiefly in Copenhagen, Fredericia, and other parts of Denmark Proper, and the cotton in the same capital, Altona, Roskilde, Christianfelde, and Hanerau. There are 24 paper mills in the kingdom, whose annual produce is about 1,200,000 reams; Randers is the principal seat of the glove manufacture; and Friedrichsvürk, Lyngby, and Haraldskjaer, of the manufacture of ironwares, next to the metropolis. Linens are made at Kiong and Holsteinborg, and in most parts constitute the occasional employment of the cottagers for the purpose of supplying their own wants. Straw hats, sailcloth, glass, soap, leather, saltpetre, gunpowder, and arms, plated goods, china and earthenware, beer and spirits, thread, refined sugar, soda, and potashes, are among the productions of Danish industry. The brandy distilleries exceed 3000 in number; and there are upwards of 4000 hands employed in making wooden shoes in various parts of Jütland. The peasants' families make their own woollen clothing in general, which is composed of a coarse stuff termed wadmel, and indeed there are few articles of domestic use, whether utensils or for apparel, which are not made by their own hands.

There is probably no country in Europe better adapted or more favourably situated in many respects for commerce than Denmark. It is the key of the Baltic, and possesses peculiar advantages for a ready and cheap intercourse with all the maritime nations of Europe. Copenhagen is the central point of the Danish foreign trade, which has been greatly favoured by the neutral policy which the government has endeavoured to pursue during the last hundred years and more. Navigation, in which above 50,000 hands are employed, is a great source of profit to the country, for the Danes navigate their vessels on cheaper terms than many of their competitors, and are excellent mariners, on which account they are the carriers for other countries, particularly to the Mediterranean and Levant. This branch of commerce is on the increase: in 1825, Denmark had 3876 vessels of the total burthen of 118,393 tons; in 1829, 3691, burthen 128,084 tons; and at present their number is estimated at upwards of 3700, in burthen 143,800 tons. In the first three years of the present century the average arrivals of Danish and Norwegian ships in foreign ports were annually 3933, of the total burthen of 401,351 tons, of which the Norwegian constituted one half at least; in 1830, they had increased to 4029 of 236,650 tons burthen, for Denmark alone. This increase will appear the greater, when it is recollected that between the years 1807 and 1810, as many as 900 vessels were lost or captured, by which the trading ships of Denmark were in 1814 reduced to so small a number, that their united burthen did not exceed 74,520 tons. In 1831, the tonnage of the British vessels which arrived in the Danish ports was 16,519 (vessels 96); and in 1835, 22,249 (vessels 120). The trade between the mother country and the West and East India colonies is quite free; the busiest traffic is carried on with the island of St. Thomas; and the value of the native produce and manufactures annually exported to all parts is about 15,000,000 dollars or 2,340,000*l.* The trade with Norway, which takes much grain, tallow, soap, &c. from Denmark, employs 200 or 300 Danish ships, and that with Iceland, Greenland, and the Faeroe Islands is of some importance. In a preceding page we have given some account of the export of grain; among the other articles of exportation are butter, cheese, brandy (about 3800 pipes), salted and smoked meats (about 3,400,000lbs.), horned cattle (about 31,000 heads), horses, skins and hides, whale and train oils, eyder-down, woollens, fish, tallow, bristles, &c. Denmark, on the other hand, imports wines, salt, silk, wools, and cotton, cotton manufactures, timber, coals, colonial produce, brandies, and spirits, glass, flax and hemp, drugs, &c. to the extent of about 14,000,000 dollars, or 2,270,000*l.* yearly. The public trading associations consist of the Royal Asiatic Company, which has 10 vessels employed in the China and East India trade, and the privileged Baltic Company, which carries on an extensive trade with the Baltic ports: both of them are established in Copenhagen. There is a brisk intercourse by sea between the several ports. The chief places of trade are Copenhagen, Altona, Kiel, Koersoer, Helsingör, Odensee, Viborg, Randers, Flensburg, Schleswig, Aalborg, Rendsburg, Tondern, Aarhuus, Glückstadt, Neustedt, and Itzehoe. At Copenhagen there are a Board of Internal Economy and Commerce, a National Bank, an Exchange and Loan Bank, and a Marine Insurance Company; and at Altona, an Exchange, Loan, and Discount Bank. By the royal decree of May, 1817, no individual can carry on trade who has not attained his majority and taken up his citizenship. Foreigners are allowed to make purchases in the wholesale way, but not to sell goods. None can become wholesale dealers in towns but such as are owners of vessels, or parts of vessels, to the extent of 26 tons at the least, and have deposited the requisite sum in the treasury. No clerk can be employed who is under 18 years of age. The Schleswig and Holstein canal has greatly facilitated the commercial intercourse between Denmark and the Baltic: in 1807, 1597 vessels passed through it; in 1814, 2060; in 1823, 2468; and in 1830, 2999.

Denmark is an absolute and hereditary monarchy, founded on three fundamental laws; the Act of Sovereignty of 1661, the King's Law (*Konge Lowen*) of 1665, solemnly ratified by the whole nation, and the Native Subjects' Law (*Ind fotts retten*) of 1776. As duke of Holstein and Lauenburg, the king is a member of the German Confederation, holds the tenth rank in point of precedency, has three votes in the full assemblies of the diet, pays a yearly quota of 2000 florins (about 90*l.*) towards the expenses of the confederation, and furnishes a contingent of 3900 men to the tenth corps of the confederate army. The sovereign must be of the Augsburg confession of faith, and must uphold its ascendancy in his dominions. He attains his majority on reaching his fourteenth year: descendants in the male succeed to the crown in preference to those in the female line. The sovereign fixes the allowances to be made to the members of the royal family of his own free will: all legislative and administrative acts proceed from his own will and pleasure. The orders of knighthood are the order of the Elephant, instituted in 1458: the Danebrog order, founded in 1219, and now bestowed for eminent services, and the order 'De l'Union Parfaite,' founded by the consort of Christian VI. in 1732, and admitting both of male and female knights. The nobility consist of one duke, nineteen counts, and twelve barons. In Holstein and Schleswig there is an equestrian community of about twenty seignorial families, who enjoy the rents and profits of all the sequestrated monastic estates, to the amount of several millions of dollars per annum, and exclude the remaining moiety of the noble landholders in these provinces from all participation in that revenue. By a decree of the 15th of May, 1834, the kingdom was divided into four electoral districts, each of which has at present its provincial assembly: these districts are the Danish Islands, which choose from sixty-six to seventy representatives; Jütland, from fifty-one to fifty-five; Schleswig, forty-four; and Holstein, forty-eight. The states of Lauenburg are of antient date: they consist of the nobility, hierarchy, and representatives of towns, but seldom meet in full assembly, their affairs being despatched by a deputation who hold annual councils under the presidency of a marshal. The four provincial assemblies must be called together at least once in two years: their consent is necessary to all alterations in laws affecting persons or properties, public imposts, or requisitions for the national service; and they are allowed to propose laws for the sovereign's adoption, and to lodge complaints against any of the public authorities.

The privy council is, by the rescript of May, 1814, the highest board in domestic affairs: it is composed of the king, as president, a vice-president, and six members. The ministry consists of a minister for the land revenues, &c., for taxes and trade, for foreign affairs, for justice and police, in Denmark Proper, for the same departments in Schleswig and Holstein, for the war department, and for naval affairs. The supreme court of justice is in Copenhagen. There is a governor for Schleswig and Holstein; and the West Indian Islands, the African possessions, and the East Indian settlements, have each of them a governor also. A Land-vogt, or lieutenant, governs the Faeroe Islands, and a Stifts-amtmann, or high bailiff, is at the head of the public authorities in Iceland.

The Danish Budget, showing the probable Receipt and Expenditure of the public Income of the kingdom of Denmark, for the year 1835:—

INCOME.

	Amount for Denmark Proper.	Amount for Schleswig and Holstein.	Total Amount.
I. Ordinary Revenues and Receipts.	Sterling.	Sterling.	Sterling.
1. Land Tax	£224,666	£136,445	£361,111
2. House Tax	35,777	14,333	50,110
3. Customs and Excise	311,111	79,111	390,222
4. Tax on Rank, and Salaries of Civil Officers	5,555	44,888	50,443
5. Stamps	29,111	15,000	44,111
6. Tax on Property inherited or transferred	11,888	10,333	22,221
7. Fees of Justice Courts and other Public Offices	18,000	3,666	21,666
8. Woods and Forests, and other Crown Lands	17,110	148,445	165,555
9. Lottery	28,888	17,223	46,111
10. Miscellaneous	6,227	1,333	7,560
	£688,333	£470,777	£1,159,110
II. Other Receipts.			
1. Surplus of Revenues derived from the Duchy of Lauenburg			£21,112
2. Interest on Property belonging to the Crown			48,888
3. Monies received on account of Property disposed of			114,444
4. Revenues of the West India Islands			5,555
5. Proceeds of the Sound Toll			200,335
Total of probable Receipts			£1,549,444

EXPENDITURE.

	Sterling.	Sterling.
I. The Royal Establishment		£130,441
II. Public Departments		154,556
III. The Army		294,666
IV. The Navy		134,777
V. The Colonies		15,555
VI. Pensions and Allowances		60,888
VII. Public Works		57,110
VIII. Industry and Trade		6,333
IX. Arts and Sciences.		
For the University of Kiel, including Miscellaneous Expenses for the Promotion of Arts and Science	£20,222	27,444
Travelling Expenses of Young Artists and Literary Men	1,666	
Expense of the Theatre at Copenhagen	5,556	
X. Charitable Institutions and Donations		21,221
XI. Miscellaneous		44,788
XII. Public Debt.		
Interest upon the Public Debt	530,555	673,332
Payment to the Commissioners of the Sinking Fund	106,777	
Total of probable Expenditure		£1,585,111

Income in 1835	£1,549,444
Expenditure	1,585,111
Deficiency	£ 35,667

The Lutheran is the predominant religion, but every other is tolerated. The affairs of the national church are under the superintendence of the eight bishops of Seeland, Laaland, Fünen, Ribe, Aarhuus, Viborg, Als, and Aalborg, a general-superintendent, sixty-two provosts, and 1488 ministers. The bishoprics are in the gift of the crown. A decree of the 5th December, 1806, attached a provost to every district (*amt*), who is appointed by the sovereign, and relieves the bishop from certain duties, particularly those relating to the supervision of scholastic institutions. The ecclesiastical concerns of the Faeroe Islands are conducted by a provost and seven ministers; those of Iceland by a bishop, resident at Skalholt, and 182 clergymen; those of the duchy of Schleswig by eleven general superintendents, who have each of them a certain number of provostships under them, amounting to 165 in all, besides sixty-eight parishes; those of Holstein by thirteen superintendents under whom are 135 provostships and five parishes. There are twelve religious communities in Denmark Proper and the duchies; a missionary college at Copenhagen, called the 'Collegium de cursu evangelii promovendo,' founded in

1714, and a seminary for approved candidates in divinity in the same city. Out of a population of 2,040,000 souls there are about 1300 Reformed Lutherans, 2100 Roman Catholics, 900 Mennonites, 1500 Herrnhuthers, and 1700 Jews; the remainder are Lutherans. The number of parishes is 1907.

Much has been done for the education of all classes in Denmark. There are thirteen seminaries for educating teachers, upwards of 2500 primary schools, and 2000 others on the Lancasterian plan; thirty gymnasia or grammar-schools, of which eighteen are in Denmark Proper, four in Schleswig, six in Holstein, one in Lauenburg, and one in Iceland; and two universities, one in Copenhagen, and the other in Kiel; the first founded in 1479, and attended by about 600 students, and the other, founded in 1665, and attended by about 300. (For the Schools for the Deaf and Dumb, see that article, vol. viii., p. 335.) Among the public libraries are three in Copenhagen and one in Kiel. The designations of the eleven societies for scientific and national purposes which are established in Denmark are given under the head of COPENHAGEN. The number of new publications varies from 200 to 250 annually; but the number of periodical journals, &c., which amounts to between seventy and eighty, is large indeed, when compared with the population. No work which does not contain more than twenty-four pages can be published without the previous sanction of the director of police; and any offensive reflections or libels upon foreign potentates, whether original or extracted from other publications, are punishable as misdemeanours. In Iceland there prevails so ardent a thirst for knowledge, that manuscript copies supply the want of printed books, and there is scarcely one in a hundred individuals, above the ages of 12 or 14, who cannot read and write.

The numerical strength of the Danish army does not exceed 6000 men at present, independently of the troops employed in the colonies; but on the peace footing it nominally consists of—the engineers, nineteen officers and thirteen privates; the artillery, 4498 officers and privates; the cavalry, 3302 officers and privates; and the infantry, 31,026 officers and privates; besides a corps of 110 cadets, and a rocket-corps, 132, the total numbers being 39,099. A sufficient number of officers and others always remain at the disposal of the crown to call a force of 25,000 men at any time into active service. The heads of the army in 1836 consisted of a field-marshal, two generals, three lieutenant-generals, twelve major-generals, and seven brevet major-generals, together with an adjutant-general and a quartermaster-general, &c. Every soldier's engagement is for eight years, of which he is not at present required to pass more than two in active service. The militia, when called out, musters 59,000 rank and file.

On the 1st of January, 1836, the navy was composed of seven ships of the line, mounting 544 guns; eight frigates, 350 guns; and five sloops, five brigs, three schooners, and three cutters, mounting 200 guns: in all thirty-one vessels and 1094 guns. To these must be added fifty-six gun-boats and six bomb-vessels, &c. The chief officers consisted of one admiral, two vice-admirals, two rear-admirals, six commanders, eleven lieutenant-commanders, two captains, twenty-five lieutenant-captains, forty-one first-lieutenants, and thirty-three second-lieutenants.

The fortresses and fortified ports of Denmark are Copenhagen, Cronburg Castle, Korsoer, Fredericia, Friedrichsort, Friedrichshaven, Rendsburg, Christiansoe near Bornholm, Nyborg, and Glückstadt. The chief military and naval establishments are the Cadet Academy, Copenhagen; the Arsenal and Archive of Charts, in the same city; a cannon and ball foundry at Friedrichsvaerk; an invalid hospital at Eckernförde; and arsenals at Rendsburg and Randers.

History.—The oldest history of Denmark is pure tradition, derived from the suspicious source of the Icelandic Legends or Saga. The first fact of which we can speak is that the Cimbri, a branch of the Normans or Scandinavians, were the earliest known inhabitants of the peninsula of Jütland and Schleswig, which was thence called The Cimbrian Chersonesus. They first became known to the Romans from their taking part with the Teutones, about 100 years before the Christian æra, in the invasion of Gaul and Italy, in the times of Marius. About A.D. 250, the Goths overran the Scandinavian territories under Odin or Wodun, and imposed rulers of their own on Sweden, Denmark, and Norway. Skiold, Odin's son, is the first name which has descended to us as sovereign of Denmark; but we possess no record of his time beyond numerous legendary fragments. Denmark appears however to have been divided into a variety of petty states, of which Skiold's descendants assumed the lordship for many centuries, and to have been inhabited by a warlike race of men, whose principal occupation was piracy. The Normans, or Angles, under which designation the Swede and Norwegian as well as the Dane were included, during the eighth and ninth centuries, established their dominion in parts of England, which they distracted by their inroads until the middle of the eleventh century: they also made themselves masters of Normandy under Rollo, colonised the Orkneys and Hebrides, the Isle of Man, Iceland, and part of Ireland, and pushed their settlements as far south as Spain, Italy, and Sicily. The first Danish monarch with respect to whom we are enabled to speak with certainty was Gorm, or Worm, the Old, a Skioldinger, who brought Jütland under his sway in 863, and succeeded between that date and the year 900 in uniting every state in Denmark to his dominion. His son, Harold II. the Blue-Tooth, introduced Christianity about the year 972. In 1000, Sven, his grandson, subjugated part of Norway, and in 1014 the greater part of England, where he soon after died; in 1016, his grandson Knud the Second, or Canute the Great, possessed himself of the whole of England and part of Scotland; and in 1030, of the remainder of Norway. To this monarch Denmark was indebted for her greatness, laws, and internal organization, and the establishment of Christianity as the religion of the country. His successors, however, were not endowed with capacity enough to preserve his dominion in its integrity: England threw off their yoke in 1034, and Norway two years afterwards. A new dynasty out of the female line of Canute's descendants mounted the throne in 1047, in the person of Sven Magnus Estritson the Third, and held the sceptre for four hundred years afterwards; but the feudal system erected by Sven and Canute stripped the sovereign of his authority, rendered the Danish king dependent upon the voice of the prelates and nobles, levelled the peasant to the condition of a serf, reduced agriculture to the lowest ebb, and surrendered commerce into the hands of the German Hanse Towns. The sovereigns were forced, by the assembly called the Handfaestningar, to recognise the states of the kingdom as their own electors, and to consent to the controul of a council. The male descendants of Magnus Sven became extinct with Waldemar the Third in 1375; and Olaf the Fourth, of the female line, Waldemar's grandson, dying in 1387, his mother, Margaretta, styled the Northern Semiramis, ascended the throne of Denmark. She acquired Norway by inheritance, and having subdued Sweden by force of arms, united the three northern kingdoms under one crown by the Calmar union in 1397. The Swedes, however, could never be brought to endure this league, and after a long series of contests, ultimately renounced the union in 1523. These contests undermined the prosperity of the Danish monarchy no less than the perpetual broils between the sovereign and his nobles on the one hand, and the nobility and clergy on the other; the population decreased greatly, and the adjacent seas swarmed with Danish pirates, while trade and navigation dwindled to insignificance. Margaretta's line having forfeited the throne in 1439, and Erick the Seventh having been deposed, the Danish States elected Christian Count of Oldenburg king. Christian founded the university of Copenhagen in 1478. The sway of his descendants was however but of brief duration, for his grandson Christian the Second, surnamed 'the Wicked,' having become obnoxious to all parties, the crown was transferred to his uncle Frederic the First, duke of Schleswig and Holstein, who received the crown of Denmark and Norway in 1523. This monarch was the mere slave of the aristocracy, who established abject servitude among the labouring classes as part of the law of the land. His son Christian the Third united the duchies of Schleswig and Holstein in perpetuity to the crown of Denmark in 1533, and brought the turbulent Norwegians to recognise the Danish kings as their sovereigns 'for ever.' In his reign the Reformation was established throughout the united kingdoms, and a code of laws, entitled the 'Recess of Kolding,' was promulgated. The struggles arising out of his partition of the greater part of Schleswig and Holstein between his brothers, became a source of much subsequent mischief to Denmark, and was not terminated until 1773, when the alienated territory was recovered by the cession of Oldenburg and Delmenhorst to its then possessor, the grand-duke of Russia.

The wars which his son Christian the Fourth waged with Sweden entailed so many disasters upon him, that he was compelled, by the treaty of Broemsebroo, in 1645, to cede to Sweden the provinces of Jempteland and Herjedalen, together with the islands of Gottland and Oesel. His son and successor, Frederic the Third, renewed the hostilities with Sweden, whose sovereign, Charles Gustavus, invaded and overran his dominions, and at length wrested from him, by the terms of the treaty of Copenhagen in 1660, the extensive districts of Schonen, Halland, Blekingen, and Bähus, in Sweden. In the same year the three estates of the realm acknowledged Frederic and his successors as absolute sovereigns of Denmark, in solemn diet at Copenhagen; and they confirmed the surrender of their rights by presenting him with the 'Arfve-Enevolds-Regierungs-Akt.' This gave occasion to the promulgation of his 'Konge-Lov,' in 1665; the fundamental law of settlement which prevails in Denmark at the present day. He was succeeded by his son, Christian the Fifth, who established the Danish West India Company in 1671, acquired the islands of St. Thomas, St. Croix, and St. John, and founded a settlement at Tranquebar. War between Denmark and Sweden was rekindled by Frederic the Fourth, his son, and was brought to a successful close by the peace of Friedrichsburg in 1720, in which Sweden ceded the right of receiving the Sound dues to the Danes, and the long-disputed claim of Denmark to the sovereignty of Schleswig was fully recognised. The subsequent hundred years were a period of continued tranquillity, during which the state rose, and enjoyed prosperity: the happiest fruits of this interval of peace were, the abolition of servitude among the peasantry, begun by Christian the Seventh in 1767, the extinction of the negro slave trade, and the establishment of greater liberty of the press. During the wars of the French Revolution, Denmark observed a strict neutrality; but in contesting the right of search as to her mercantile shipping, insisted upon by England, which led her into a defensive alliance with Russia, Prussia, and Sweden, she brought upon herself the loss of her East and West India colonies, and suffered severely in the naval fight off Copenhagen in 1801. The treaty which ensued restored those colonies to her. The peace of Tilsit, in 1807, in which there were secret articles stipulating that the whole Danish navy should be delivered over to the French emperor, occasioned however a fresh rupture with England, which commenced with the appearance of a formidable force under Earl Cathcart and Lord Gambier on the coast of Seeland, and was carried to open hostilities upon the refusal of the Danish government to surrender their fleet, consisting of 15 ships of the line, 14 frigates, and 3 brigs, as well as their timber and the naval stores then in the yards and arsenal of Copenhagen. Upon this refusal, Lord Gambier bombarded the Danish metropolis, from the 2nd to the 5th of September, forced it to capitulate after a considerable part of the town had been burnt, and carried away the fleet to England. In November following a formal declaration of war was issued by the English government, and Denmark, whom the outrage at Copenhagen had effectually thrown into the arms of France, was again stripped of her colonial possessions, and not only lost the islands of Anholt and Heligoland, but the whole of her foreign commerce. Even after the destruction of Napoleon's armies in Russia, and in spite of the efforts of the allied powers in 1813, she could not be induced to renounce her alliance with France, and the summons to surrender Norway to Sweden impelled her still more strongly to persist in that alliance. The consequence was that the Crown Prince of Sweden entered Holstein and Schleswig, and by his successful progress terrified Frederic the Sixth into signing the treaty of Kiel on the 14th of January, 1814. In virtue of its terms, Denmark accepted Pomerania in exchange for Norway. This province was in 1815 ceded by her to Prussia, in consideration of her receiving the duchy of Lauenburg and a large sum of money. In making peace with England, she recovered her colonial dominions, but with the loss of her fleet and the island of Heligoland.

DENNIS, JOHN, was the son of a saddler of London, where he was born in 1657. Having been put to school at Harrow, he was sent thence in 1675 to Caius College, Cambridge. In 1679 he removed to Trinity Hall, in the same university, and in 1683 took his degree of A.M. There appears to be no foundation for the story told in Baker's 'Biographia Dramatica,' that he was expelled from college for attempting to stab a person in the dark. On leaving the university he spent some time in travelling through France and Italy. Returning home from the continent, full of dislike to the manners of the people, and especially to the modes of government he had seen there, and finding himself in possession of a small fortune, the bequest of an uncle, he set up for a flaming whig, and formed connexions with several of the leading political and literary characters of that party. As a man of letters, however, he did not confine his acquaintance within the limits of his political partialities; Dryden and Wycherley, for instance, as well as Halifax and Congreve, are enumerated among his friends. In the idle and expensive life which he now led he soon dissipated what property he had, and for the rest of his life he was obliged to depend for subsistence upon his pen, and the still more precarious resource of private patronage. No experience however seems to have cured his improvidence. In his difficulties the duke of Marlborough procured for him the place of a waiter at the Custom House, a sinecure worth 120*l.* a year; but he was not long in selling this appointment, and it was only the kind interference of lord Halifax that induced him to reserve out of it a small annuity for a certain term of years. This term he was unfortunate enough to outlive, and, to add to his miseries, he became blind in his last days, so that he was in the end reduced to solicit the charity of the public by having a play acted for his benefit, which some of his old friends, and some also whom he had made his enemies, interested themselves in getting up. Dennis died in 1734. Throughout his life the violence and suspiciousness of his temper had at times approached to insanity, and were the constant curse of his unhappy existence, making him at once miserable and ridiculous. Owing to this disease he quarrelled with everybody, and rarely made a friend or an acquaintance in whom his distempered vision did not soon discover an enemy in disguise. Yet Dennis wanted neither talents nor acquirements. Many of his literary productions show much acuteness and good sense, as well as considerable learning. He began to publish occasional pieces in verse, mostly of a satirical cast, about 1690, and from that time till near his death his name was constantly before the public as a small poet, a political and critical pamphleteer, and a writer for the theatres. His poems and plays were sufficiently worthless; but one or two of the latter obtained some notoriety chiefly from the fuel they administered to certain popular prejudices that happened to rage at the time. His 'Liberty Asserted,' in particular, was acted with great applause in the Lincoln's Inn Fields theatre in 1704, in consequence of the violent strain of its Anti-Gallicism, a sentiment with which the audience, in the excitement of the war with France, was then peculiarly disposed to sympathise. Connected with this play are the two well-known stories about Dennis, during the negociations that preceded the peace of Utrecht, going to the duke of Marlborough and asking his Grace to get an article inserted in the treaty to protect his person from the French king; and about his afterwards running away from the house of a friend with whom he was staying on the Sussex coast, because he thought that a vessel he saw approaching was coming to seize him. Another of his dramatic attempts, his 'Appius and Virginia,' acted and damned at Drury-lane in 1709, is famous for the new kind of thunder introduced in it, and which the author, when a few nights after he found the players making use of the contrivance in Macbeth, rose in the pit and claimed with an oath as his thunder. Dennis's thunder is said to be that still used at the theatres.

Among the ablest of his critical disquisitions were his attacks upon Addison's 'Cato,' and Pope's 'Essay on Man.' Addison had been among the number of his friends, but Dennis supposing that something in the second and third numbers of the 'Spectator' was intended as an offensive allusion to him, took the opportunity of avenging himself when 'Cato' appeared. Much of his criticism nevertheless has generally been deemed by no means the product of mere spite. It was upon this occasion that Pope, in conjunction with Swift, wrote 'The Narrative of Dr. Robert Norris, concerning the strange and deplorable Frenzy of Mr. John Dennis, an Officer in the Custom House.' Pope also stuck Dennis in his 'Essay on Criticism,' and afterwards gibbeted him much more conspicuously in the 'Dunciad.' The life of Dennis has been written with prodigious expansion by Dr. Kippis in the 'Biographia Britannia,' his article extending to fourteen long folio pages. He has also furnished the subject of an amusing paper in Mr. D'Israeli's 'Calamities of Authors,' entitled 'Influence of a Bad Temper in Criticism.'

DENOMINATOR, the number of parts into which a unit is divided in any fraction; thus, in 7-10ths of a unit, 10 is the denominator. [Fraction.]

DENS CANIS. [Erythonium.]

DENSITY. This term is absolutely of the same practical meaning as its measure, Specific Gravity, implying that relation of one mass of matter to another, which is suggested by our knowing that a given bulk of the first weighs more than the same of the second. The term has no absolute meaning: gold is more dense than air, but neither is absolutely dense, nor can we assign any meaning to the latter term. It were perhaps to be wished that the shorter term, density, should be employed instead of the longer one, specific gravity; but as custom has referred to the latter term all mathematical considerations connected with the former, we do not here pursue the subject further. [Specific Gravity.]

DENTA'LIUM, a genus of testaceous mollusks, whose place in the animal series was first satisfactorily determined by Mr. G. P. Deshayes. Rondelet considered the Dentalia as marine shell-worms (vermisseaux de mer), though he noticed them as worthy of particular attention; Lister introduced them at the end of the limpets (Patellæ); Lang followed in nearly the same steps, separating, after the Patellæ a section wherein he arranged, together with the Dentalia, all the calcareous tubes of Annelids then known. Breyne placed his genus *Tubulus*, containing the Dentalia, &c., at the head of his *Monothalamous shells*, the first of the two grand orders, *the Monothalamous* and *the Polythalamous*, into which he divided the testaceans. In this position Dentalium was separated from the Patellæ by all the other univalve shells comprised in the *Cochlidia*, as well as by the Polythalamous series; in short, by the entire interval of the univalve testaceans, Breyne, as M. Deshayes observes, having probably considered the Patellæ as the passage from the univalves to the bivalves; for he places them immediately before the latter. Tournefort gave the Patellæ a position at the head of the univalve shells, and at the end, before the bivalves, he placed the *Dentalia, Entalia*, and the other marine testaceous tubes. D'Argenville, in his 'Zoomorphose,' appears to be the first who attempted to give any notion at all approaching to reality of the animal, the result of a note and drawing which had been sent to him from India. Though the materials were too incomplete to furnish secure data for fixing its position, they gave information which former authors had not enjoyed, and there was certainly enough to prevent D'Argenville from placing it in the heterogeneous third division of his system, denominated by him the Multivalves. Linnæus arranged it immediately after *Patella*, and before *Serpula*, stating the animal to be a *Terebella*, and the shell to be univalve, tubular, straight (*recta*), monothalamous, and pervious at each extremity. Bruguière gave it nearly the same position: but if both these zoologists were right in making Dentalium follow Patella, they were as far wrong in placing it by the side of *Serpula, Teredo, Sabella*, and above all, *Aspergillum*. Lamarck, in his 'Système des Animaux sans Vertèbres,' (1801,) arranged Dentalium with *Terebella*, and other genera analogous in appearance. In the 'Philosophie Zoologique' he separated the class of worms of the *Système* into two other classes, and formed the 'annelids,' with the section of external worms (vers extérieurs). He elevated, observes M. Deshayes, this division sufficiently in the series of *Invertebrata*, the presence of a heart and a circulation making it approximate to the mollusks; whilst the 'worms,' very inferior in organization, remained between the soft *Radiata* and the *Insects*. In this new class, adds M. Deshayes, we find the Dentalia in the same section with *Serpula, Spirorbis*, and *Siliquaria*. This arrangement was not altered in 'L'Extrait du Cours,' published in 1811. But, in the great work of the 'Animaux sans Vertèbres,' Lamarck, assisted by the labours of Savigny, and deceived, moreover, by the communications of M. Fleuriau de Bellevue, considered *Dentalium* as approximated to *Clymene*, and placed it in the family of *Maldanians* of M. Savigny. Systematic authors, generally, not knowing more than Lamarck did, that knowledge being confined to the tube, followed Lamarck's opinion. Cuvier, in the first edition, placed it among the *Annélides Tubicoles*, between *Aspergillum* (*Penicillus*, Lam.) and *Siliquaria*. Savigny, in his 'Système des Annélides,' gave a summary description of the animal, but it was too incomplete to decide the question finally, though sufficient to overthrow the observations of M. Fleuriau de Bellevue. The *Dentalium Entalis*, which was sent to Savigny by our countryman Leach, gave sufficient information to that celebrated zoologist to enable him to say that the animal had no trace of rings, that it had no hairs (*soies*) on the lateral parts of the body, that it was essentially muscular, and that it could no longer remain among the *Chætopods*.

Dentalium Entalis was the species on which M. Deshayes made his observations; and in a very interesting and elaborate paper read before the Society of Natural History of Paris, on the 18th of March, 1825, he gave the facts which led him to the conclusion stated at the commencement of this article. The following is a summary of his description: but we must premise that M. Deshayes's specimens were forwarded to him in spirit, and were, consequently, a good deal contracted.

External Parts. Animal conical and elongated, like the shelly investing tube; (*dorsal surface* corresponding with the convexity of the shell; *ventral surface* corresponding with the concavity;) smooth and truncated obliquely at the anterior end, the centre of the truncation with a small pyramidal process, which is the extremity of the foot. The posterior parts are less muscular, and the termination is usually a funnel-shaped expansion, variously developed in different individuals; for in some it is firm and well developed, and in others it is scarcely perceptible. This expansion is separated from the rest of the body by a strongly defined contraction. There is a muscular ring, broader on the ventral than on the dorsal surface, above this contraction, and by that ring the animal is attached to the shell, which on its inner surface presents, at about one-fifth of its length from the posterior extremity, a corresponding impression in the shape of a horseshoe, the interrupted portion being on the concave side. On the dorsal surface a small elevation is perceptible, at about one-third of its length from the anterior end, indicating the place of the head. The whole extent below this is occupied by two muscles on each side, distinctly observable through the abdominal parietes. These muscles are symmetrical, flattened, and directed obliquely from the sides of the foot towards the dorsal surface and the posterior extremity of the animal, giving rise to, and becoming commingled with, the muscle of attachment. On the abdominal surface, likewise, there are on each side, at about one-third of its length from the anterior end, two symmetrical organs deeply jagged, and of a dark brown colour: these form the liver. Below this point, nearly the whole of the abdomen is visible through its transparent parietes filled by granulations contained in the very large ovary, and by the straight descending intestine which terminates at the expanded extremity in a mesial vent. The whole of the anterior part of the animal is invested by a fine membrane, which is fixed posteriorly to the origin of the foot, and is free in front, where its circumference is thickened. It is perforated in its centre, and M. Deshayes considers this to be the mantle. The thickened portion is produced by a circular sphincter, which, when contracted, wrinkles the skin, closely embraces in its opening the extremity of the foot, and thus cuts off any external communication. M. D'Orbigny, jun., who furnished a drawing of the living animal in an expanded state, makes the dilated lobes of the foot resemble a flower, whose undulated and small corolla supports in its centre a pistil thickened towards the middle, and pointed at its free end.

On slitting the mantle down the middle of its dorsal surface, separating it from its insertion to the right and left, and turning it downwards and to the right, the foot, the head, and the branchiæ appear.

The *foot* is elongated, subcylindrical, slightly conical, and flattened from above downwards, fleshy throughout, and situated at the interior and anterior part of the head, having its upper and under surfaces slightly grooved in the middle. The anterior extremity is largest, and its centre is occupied by a sort of conical nipple, broader at its base, being there partly covered by two small notched lateral lobes, the notches corresponding with the grooves of the foot. The posterior extremity has a bifurcated appearance, owing to the attachment there of the retractor muscles; its middle portion projects a little into the abdominal cavity, giving support to the stomach and the other principal viscera.

Organs of Digestion. The *head* consists only of a mouth, and is situated superiorly at the hinder extremity of the foot. It is bell-shaped, and flattened from before backwards. Two black points on its sides might be mistaken for eyes, but these are the *jaws* situated within the mouth, and visible through the thin substance of which it is composed: they are spherical, horny, rough on their outer surface, cleft in the middle, and bearing a considerable resemblance to a small bivalve shell. There are two *lips* deeply cleft at the margin, or, more properly speaking, furnished each of them with three pair of labial tentacles, those of the posterior lip, the middle pair especially, being much larger than those of the anterior. There is a naked space in the centre of the anterior lip indicating the aperture of the mouth, which is contracted into a short fleshy *œsophagus*, terminating rapidly in a thick pear-shaped *stomach*, supported by and closely adhering to the extremity of the foot, and containing within, near the cardiac opening, a rather complicated tooth-like apparatus. By a distinct vessel from each of the symmetrical lobes of the liver its secretion is poured into the stomach, which terminates below in a slender, transparent, straight, mesial intestine opening, as before observed, at the dilated posterior extremity.

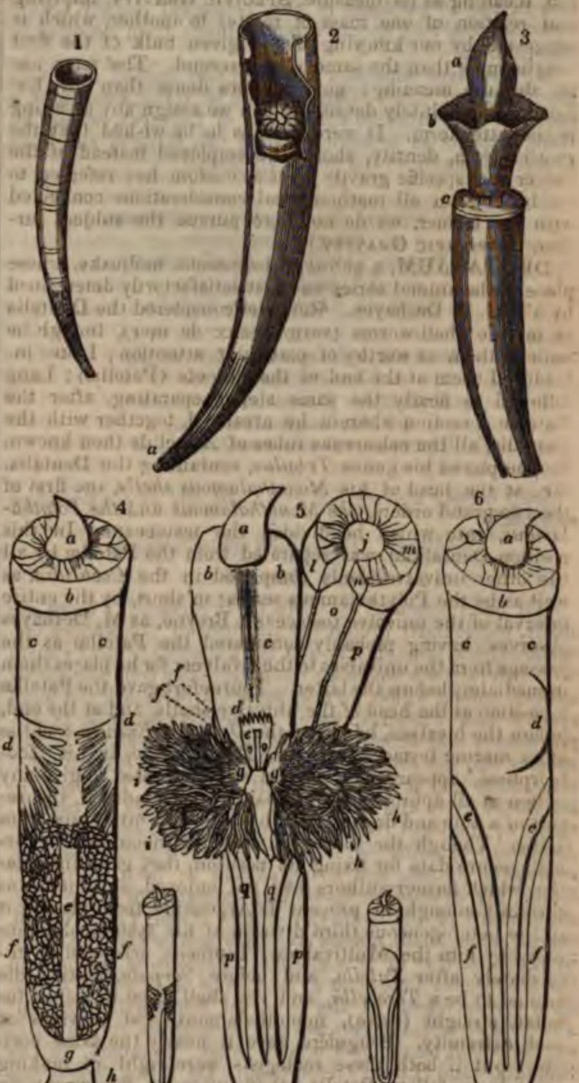
Organs of Generation. Imperfectly known. No male organ discovered. The external opening of the large ovary not yet detected.

Circulating System. Heart symmetrical, situated above the stomach, and contained in a pear-shaped pericardium. A vascular trunk issues from the anterior extremity of this sac, passes in the direction of the neck, and divides into two large branches, one being distributed to each of the *branchiæ*.

Respiratory System. Branchiæ two, symmetrically situated on the lateral and posterior parts of the neck, and supported on a divided pedicle or branchiferous membrane, formed of many very fine, soft, flexible, tentacular filaments with club-shaped terminations, and appearing from their position to be equally adapted for directing nourishment towards the mouth, and for fulfilling their important office of aerating the blood.

Nervous System. Apparently ganglionic; the cerebral ganglion, the only one yet detected, is small, quadrilateral, considerably elongated, and placed longitudinally on the middle of the posterior surface of the head. Two very minute filaments issue from its inferior angles and pass to the œsophagus; they have not been traced beyond it.

M. de Blainville (*Malacologie*, 1825) agrees with M. Deshayes in the conclusion to which the latter came, viz. that Dentalium is a true mollusk, and he makes it the type of his first order *Cirrhobranchiata*, of his first section of his third subclass, *Paracephalophora Hermaphrodita*, placing it next to *Patella*. M. Rang (1829) follows De Blainville in referring it to his order Cirrhobranchiata, of which Rang makes it the only family, as does De Blainville, and he gives it a situation between *Fissurella* and *Patella*. Cuvier, in the last edition of the Règne Animal (1830), still retains *Dentalium* among the *Annelids*, placing it immediately after *Siphostoma* of Otto; but he adds, that the recent observations of Savigny, and above all those of Deshayes, render such a classification very doubtful. The animal, he observes, does not appear to possess any sensible articulation, nor any lateral hairs (*soies*), but it has anteriorly (en avant) a membranous tube, in the interior of which is a sort of foot, or fleshy and conical operculum, which closes its orifice. On the base of this foot, he adds, is a small and flattened head, and on the nape are to be seen the plumose branchiæ. If, he continues, the operculum recals to mind the foot of the *Vermeti* and *Siliquariæ*, which have already been transferred to the class of mollusks, the branchiæ remind us of *Amphitrite* and *Terebellum;* and he concludes by remarking that ulterior observations on their anatomy, and principally on their nervous and vascular systems, will resolve this problem. Mr. Gray, who has compared the description of the animal given by M. Deshayes with specimens in the British Museum, is, he informs us, satisfied with the correctness of that description, and he considers that the most natural situation of *Dentalium* is nearest the *Fissurellæ*, but still far from them. The apices of the British species, he observes, often appear to be either broken off, or to have fallen off of themselves, like the tips of decollated shells; and he adds, that when the tip is broken, the animal forms a slight tube within, which is more or less produced beyond the tip; and that the late Dr. Turton described a specimen in this state as a species under the name of *Dentalium labiatum*. Mr. Gray thinks that there is only one species found on our coasts, the other so-called species being mere varieties depending either on the worn or broken state of the specimens. In his 'Spicilegia Zoologica' he has described a *Siphunculus* which inhabits these shells, and which, he believes, has been considered by some authors to be the real inhabitant of the shell.



1. Shell of *Dentalium Entalis*, nat. size. 2. Shell magnified, broken longitudinally, showing the animal in a contracted state; *a*, the posterior extremity prolonging itself into a small accidental tube. 3. Magnified, representing the animal at the moment of its advancing out of the shell; *a*, *b*, the foot, the lobes of which are developed in the form of a corolla; *c*, a part of the collar. 4. The animal magnified, abdominal aspect; *a*, extremity of the foot; *b*, the collar; *c*, *c*, the mantle; *d*, *d*, the liver; *e*, the intestine; *f*, the ovary; *g*, the muscle of insertion; *j*, *h*, the *pavillon* and its neck; *i*, the vent. 6. Magnified, dorsal aspect; *a*, extremity of the foot; *b*, the collar; *c*, *c*, the mantle; *d*, slight projection produced by the head and the branchiæ; *e*, *e*, internal retractile muscles; *f*, *f*, external retractile muscle; *g*, neck of the *pavillon*; *h*, the *pavillon*. 5. Magnified. The mantle has been slit in the dorsal and mesial line, detached in part from its posterior insertion, and turned aside showing, *a*, the extremity of the foot which closes the aperture *j*, of the collar *l*, *m*, of the mantle *n*, *o*, *p*; *b*, *b*, lobes of the foot; *c*, the foot itself, presenting a depression or channel running its whole length; *d*, the head; *e*, the cerebral ganglion; *f*, *f*, the two buccal jaws; *g*, *g*, the pedicles or branchiferous membranes; *h*, *h*, *i*, *i*, the branchiæ; *p*, *p*, *q*, *q*, the retractor muscles; *s*, the muscle of insertion; *t*, the neck of the *pavillon*. 7. fig. 4 nat. size. 8. fig. 6. nat. size. (Deshayes.)

Generic character. Animal (see above.) *Shell* regular, symmetrical, in form of a very elongated cone truncated at the summit, slightly curved, open at each extremity by a rounded orifice.

Geographical Distribution, very much extended: few seas are without some of the genus, which varies much in size.

They are found sometimes in deep water, frequently near the shore.

The species are numerous. M. Deshayes in the monograph which follows the anatomical part of his memoir above abridged, gives forty-two recent and fossil. Mr. G. B. Sowerby in his 'Observations on Mr. Deshayes's Monograph' (Zool. Journ. vol. iv. p. 195), proposes some corrections with regard to several of the species given in the monograph, and adds two to those recorded by Deshayes, and in the Proceedings of the Zoological Society (1832) describes four new species brought home from America by Mr. Cuming.

M. Deshayes separates his forty-two species into four groups, one of which is rejected by M. Rang, because it is occupied by *Dentalium coarctatum* of Lamarck, which M. Rang regards as belonging to his (M. Rang's) subgenus *Cresis* belonging to the genus *Cleodora*.

1.

Shell not slit at its posterior extremity.

a. Longitudinal striæ.

Example, *Dentalium Elephantinum.*

b. No longitudinal striæ.

Example. *Dentalium Entalis.*

2.

Shell slit at its posterior extremity.

a. Longitudinal striæ.

Example. *Dentalium striatum.*

b. No longitudinal striæ.

Example. *Dentalium eburneum.*

3.

Shell having a marginal rim; not slit at its posterior extremity.

Example. *Dentalium strangulatum.*

Fossil Dentalia.

'Of fossil species,' says Mr. G. B. Sowerby, 'there are many, particularly in the marine beds of the tertiary formations; the London clay and the Calcaire Grossier swarm with several sorts not easily distinguishable from the recent species, among which we may particularly remark the fossil species from Piacenza, which so nearly resembles *D. elephantinum* that Brocchi has not hesitated to refer it to that species, and the *eburneum* of Lamarck, which he says inhabits India, and is found fossil at Grignon. Deshayes, in his tables gives the number of living species as twenty-three, of the fossil (tertiary) thirty-four, and the following, *Dentalia elephantinum, dentalis, novem costatum, entalis, eburneum, fissura*, and *strangulatum* as both living and fossil. Mr. Mantell in his tabular arrangement of the organic remains of the county of Sussex (Geol. Trans. vol. iii. second series, 1829), notes a species, which he does not name, in the blue clay of Bracklesham; *Dentalium planum*, in the arenaceous limestone or sandstone of Bognor; *Dentalium cylindricum*, in the sand on Emsworth Common; *Dentalia striatum, ellipticum* and *decussatum*, in the Gault or Folkstone marl; and one or more, unnamed, in the Shanklin sand (Lower Green sand). Dr. Fitton figures one species, *Dentalium medium*, from the green sand of Blackdown in his interesting 'Observations on some of the strata between the chalk and Oxford Oolite, in the south-east of England.' (Geol. Trans. vol. iv. second series, 1836.) And he notes *D. ellipticum* in the Gault at Copt Point, on the authority of the Rev. G. E. Smith. In his 'Systematic and Stratigraphical List of Fossils' (Appendix B. to the same memoir) four named species, including *D. ellipticum* and *D. medium*, and an uncertain species, are noted from the Gault of Kent, South Wilts, and Cambridge, and the sands of Blackdown. Mr. Lea in his 'Contributions to Geology,' (1833,) describes two new species, *Dentalium alternatum* and *D. turritum* from the tertiary beds of Claiborne, Alabama, and gives the following summary. 'In Great Britain fourteen species have been obtained from the Lias to the Crag. M. Deshayes's tables give thirty-four, of which thirteen are from the Paris basin, the Eocene period. In this country (America) Dr. Morton has observed casts in the upper green sand of New Jersey and Delaware, and Mr. Say, one species, the *attenuatum*, in the tertiary of Maryland.' Mr. Murchison informs us that he knows of no *Dentalia* in the Silurian or underlying systems of rock.

DENTA'TUS, the surname of the Roman consul Curius, who defeated king Pyrrhus near Tarentum. He is said by Pliny to have been born with teeth, and to have received the name Dentatus from this circumstance. He gained several victories over the Samnites, Sabines, and others, and was remarkable for his great frugality. When the ambassadors of the Samnites went with a quantity of gold to attempt to bribe him, they found him cooking some vegetables on his fire, and were dismissed with the reply, that he preferred ruling the rich to being rich, and that he who could not be conquered in battle was not to be corrupted by gold. (Horat. *Od.* i. 12, 41; Florus, i. 15.)

DENTA'TUS, LU'CIUS SICI'NIUS, a Roman tribune, who distinguished himself in battle chiefly against the Æqui and the Sabines. Livy calls him Lucius Siccius (iii. 43). According to Valerius Maximus (iii. 2), he had been in 120 engagements, had forty-five wounds in the breast, and had received an accumulation of honours almost incredible. Through the jealousy and treachery of Appius Claudius he was murdered by the soldiers whom he was appointed to command. He no sooner perceived their design than he stood with his back to a rock, and drawing his sword, killed fifteen of his assailants, and wounded thirty more: at length they ascended the rock, and overwhelmed him with stones from above. On their return to their camp they gave out that they had engaged with the enemy, and that Sicinius had fallen in the battle. (Dionys. Halicarnassensis x.; Livius iii. 43.)

DENTILS. [Column.]

DENTIPORA. [Madrephyllœa.]

DENTIROSTRES. [Birds, vol. iv., p. 431; Laniadæ.]

DENTITION, the formation and evolution of the teeth. The varied processes by which the teeth are formed, developed, and arranged, are among the most curious and complicated operations of the animal economy. The different stages of dentition, in the human being, mark distinct epochs of human life, in which many important changes occur in the physical frame, simultaneously with which new mental powers are developed.

The teeth differ in their organization in several important respects from all other organs of the body. They are of a bony structure, and are placed in the arches of the upper and lower maxillary or jaw-bones. They consist of two sets, of which the one is intended to last only for a short time, while the other is destined to last during the whole term of life. The first are called the temporary and the second the permanent teeth. The temporary teeth, twenty in number, are in general considerably smaller than the permanent, have a less firm and solid texture, and their characteristic forms and prominences are much less strongly marked. The permanent teeth, thirty-two in number, are arranged in perfect uniformity, eight on each side of each jaw, those of the one side exactly corresponding with those of the opposite. They are divided into four distinct classes, which present specific differences in size, form, development, articulation, and use; namely, on each side of each jaw, two incisores, one cuspidatus, two bicuspides, and three molares. There are no phenomena in the human economy more wonderful than those by which these teeth assume their ultimate form, position, and relations.

Preparation is made for the production of the teeth long before the period of birth. If the jaws be carefully examined about two months after conception, an extremely soft jelly-like substance is found lying along the edge of each maxillary arch. At the third month this has assumed a somewhat firmer consistence, and is contained within a shallow groove of bone, which constitutes the first step towards the formation of the osseous plates between which the teeth are to be ultimately included. The pulpy substance now begins to be partially divided into distinct portions. At the same time filaments of bone shoot across from one side of the groove of bone to the other, and thus define the divisions of the alveoli or sockets, in which the teeth are to be contained. The separate pulps formed by the division of the pulpy substance constitute the rudiments or bases upon which the teeth are formed. As yet they lie upon the vessels and nerves which run along the bottom of the bony groove. They are extremely soft, gelatinous, and semitransparent. Each is partially enclosed in a membrane or sac.

If this sac be opened at the fourth month, a small point of ossification may be distinctly seen deposited upon certain of the pulps. This is the commencement of the formation of the bony substance of the tooth. The ossific matter is formed not by the pulp itself, but is secreted from the blood and deposited upon the pulp by an extremely delicate, thin, vascular membrane, which covers its surface, and which is closely attached to it by vessels. This membrane, termed the proper membrane of the pulp, is conjectured to be a production of the membrane which covers the bony substance of the jaw, and which is called its periosteum.

The sac which envelopes the whole is thick in its texture, and consists of two layers, which are easily separable after a short maceration, and both of which are vascular. The enveloping sac which loosely surrounds the pulp is attached to the pulp only at its base where the vessels enter, but it is intimately and inseparably connected with the gum, from which it is supplied with its blood-vessels and nerves.

The bony matter is first deposited on the points of the teeth; as the deposition increases, the bone assumes by degrees the appearance of a thin osseous shell spread over the pulp and its proper membrane, which retire as the bone continues to be deposited, so that this bony shell is interposed between the pulp with its membrane and the investing sac.

Almost from its first origin the form of the pulp is nearly the same as that which the crown of the tooth is destined to assume. It is observed that ossification commences on as many points as the future tooth will have eminences on its surface, and that accordingly the incisores and cuspidati commence with one point, and the molares with several.

As the shell of bone increases, the alveoli, or sockets for the reception of the teeth, deepen and separate more completely the one from the other. When the osseous shell has extended so far as nearly to cover the original form of the pulp, the pulp elongates at its base. This elongation of the pulp forms the basis of the root of the tooth. In those teeth which have only one root, a conical shell of bone is formed around the elongated portion of the pulp, which continues to extend in length as the ossification advances. On the other hand, in those teeth which have several roots, the pulp, the point where it begins to elongate, divides into a number of processes, corresponding to the number of roots proper to the tooth; and from the osseous shell a process of bone is sent across from one side of the shell to the other, between the divided processes of pulp, and the ossification is then continued around each respectively.

From the whole then it appears, that an outer lamina of bone is first formed and completed, and that then succeeding laminæ are deposited one within another, the pulp receding as the osseous matter increases, until at length there remains only the permanent cavity of the tooth, lined with its proper membrane, and filled with the remaining portion of the pulp, which now serves as the bed upon which blood-vessels and nerves ramify previously to their entering the substance of the teeth.

Such is the mode in which the osseous matter is formed and deposited; but now a new process takes place. When the bony shell has extended as far as the neck of the tooth, the investing sac attaches itself closely to this point, though it continues to envelop the body of the tooth only loosely. And now a remarkable alteration takes place in the substance of the enveloping membrane, which becomes thickened and much more vascular, particularly the inner layer, over the whole internal surface of which the blood-vessels may be seen obviously enlarged, and capable therefore of receiving a much greater supply of blood. The object of this change in the condition of the membrane is to fit it for a new function which it is destined to perform. From the whole of the internal surface, thus furnished with a greatly-increased supply of blood, a thickish fluid is poured out. This fluid is speedily converted into a dark, solid, chalky substance, which afterwards, by a more perfect crystallization, becomes white and exceedingly hard. This is the enamel, which, first deposited on the points at which ossification had commenced, by degrees covers in one continuous layer the whole crown of the tooth. Thus the office of the investing membrane, which, it has been already stated, is connected with the gum, is the secretion of an inorganic substance, the enamel, and after it has accomplished this office the sac is absorbed; but the tooth itself is the production of a substance independent of the gum, and immediately connected by its vessels, as well as by its secreting membrane, with the bone of the jaw.

Such are the curious phenomena connected with the formation of the teeth. But this account relates only to the formation of the temporary teeth. The rudiments of the permanent teeth are not original and independent, like those of the temporary. The permanent teeth are derived from the temporary, and they remain for a considerable time attached to and intimately connected with their parents.

At an early period in the formation of the temporary teeth the investing sac gives off a small process or bud, containing a portion of the essential rudiments; namely, the pulp covered by its proper membrane. This constitutes the rudiment of the permanent tooth. It commences in a small thickening on one side of the parent sac, which gradually becomes more and more circumscribed, and at length assumes a distinct form, though still connected with it by a peduncle. For a time the new rudiment is contained within the same alveolus or socket with its parent, the socket being excavated by the absorbents for its reception by a process unparalleled among the phenomena of physiology. ‘It is not,’ says Mr. Thomas Bell, whose researches have shed new light on the structure of the teeth, and of whose excellent work we have largely availed ourselves in this account, ‘it is not, as has been believed, in consequence of the pressure of the new rudiment upon the bone, that this absorption is produced, but by a true process of anticipation; for I have seen, both in the human subject, and more evidently still in the foal, the commencement of this excavation before the new sac was formed, and consequently before any pressure could have taken place on the parietes of the socket. The absorption does not in fact commence in the smooth surface of the alveolus, but in the cancelli of the bone immediately behind it, where no pressure could operate; and it is only by carefully removing the parietes of the socket, where the excavation is intended to be formed, that the very commencement of the process can be observed. By degrees a small recess is thus formed in the parietes of the alveolus, in which the new rudiment is lodged, and this excavation continues to increase with the increasing size of the rudiment, whilst at the same time the maxillary bone becomes enlarged, and the temporary tooth, advancing in its formation, rises in the socket. The new cell is thus gradually separated from the former one, both by being itself more and more deeply excavated in the substance of the bone, and also by the deposition of a bony partition between them; and the rudiment of the permanent tooth is at length shut up in its proper socket. There is not however, even now, a total disunion between the two teeth, for as the temporary one grows and rises in the jaw, the connecting cord or peduncle elongates; and although the sac from which it is derived by degrees becomes absorbed, it still remains attached to the neck of the temporary tooth, even long after the latter has pierced the gum; and this connexion between the temporary tooth, the permanent rudiment, and the gum, is thus kept up by means of the cord, through a small opening in the top of the new alveolus, which is seen perforating the alveolar process immediately behind each temporary tooth.

‘The situation of each permanent rudiment, when its corresponding temporary tooth has made its appearance through the gum, is beneath and a little behind the latter, and rather farther from the centre of the jaw. From the preceding statement then it will be readily understood, that the upper part of the new sac, being by means of the cord connected with the gum, assumes by-and-by the same relation to that substance as that which the temporary rudiment, as before described, had originally sustained; whilst, from its substance being deeply imbedded in the jaw, the vessels and nerves which had entered into the composition of the new process of pulp in its first production, probably become so enlarged and modified in their structure as ultimately to form the true dental branches. This is much more probable than to suppose that a new set of nerves and vessels are given off from the maxillary branches to join the pulps at a distance, through an intervening layer of bone of an indefinite thickness, to supply every new tooth.

‘We now therefore find the new rudiment in a state nearly analogous to that in which the parent tooth was originally placed, and with similar relations to the surrounding parts; the sac above attached to the gum, and the pulp beneath covered with its proper membrane, connected by its vessels, &c. with the jaws. The foregoing account will convey an accurate idea, according to my views of this curious subject, of the mode in which the permanent teeth are produced.’

The ossification of the temporary teeth commences, as has been stated, at about the fourth month after conception. At this period the pulps of the whole of the temporary teeth may be observed. There are also distinguishable the pulps of the first permanent molares; but the latter are not yet very distinct. At the fifth month, or rather earlier, may be distinguished the pulps of the permanent central incisores, though extremely small, and still closely attached to the parent sacs.

At birth the alveoli of the temporary incisores and cuspidati are formed with some distinctness; and partially also the alveoli of the molares. Ossification has advanced on all the temporary pulps, so as to form shells of bone, reaching some way over their crowns. It has also commenced in a minute point on the first permanent molares. The sacs of the permanent incisores and cuspidati may also be distinctly perceived lying in contact with the temporary ones, immediately behind them, and exhibiting in a very beautiful manner the peculiar connexion between them which has been described.

As ossification proceeds, the roots of the teeth continue to elongate, until first those of the incisores, and subsequently the others, can no longer be retained within the alveoli; preparation is now made to facilitate their passage through the gums by absorption of the containing parts.

When the tooth has arrived at this stage it presses upon the gum, a portion of the sac being still interposed. As this membrane has already secreted the enamel, it becomes absorbed at the point where pressure is first made, and the gradual removal of the sac and gum is the consequence. It is not improbable that when the membrane has fulfilled its office, it becomes removed by the spontaneous action of the absorbents, independent of pressure.

The age at which the teeth first make their appearance varies considerably; frequently without any apparent reference to the constitutional powers of the child. Instances are not wanting in which children have been born with two or more teeth. In many other cases the teeth have not come through the gum until fourteen or sixteen months, or even as late as two or three years. In general however dentition may be said to commence at the age of from five to eight months. It usually proceeds in the following order, the teeth of the inferior jaw almost always preceding those of the superior for a longer or shorter time.

From	5 to 8	months,	the	four	central incisores.
„	7 to 10	„		„ „	lateral incisores.
„	12 to 16	„		„ „	anterior molares.
„	14 to 20	„		„ „	cuspidati.
„	18 to 36	„		„ „	posterior molares.

These periods are however only given as a general rule, liable to continual exceptions, not only in the time at which the different teeth appear, but also in the relative order of their precedence.

According to Dr. Ashburner, who has paid great attention to this subject, and who has had ample opportunities of observation, the teeth of the first dentition commonly cut in couples; the two anterior incisores of the lower-jaw appear first; then, in perhaps from fifteen to twenty days, the two anterior incisores of the upper-jaw come through; to these succeed the lateral couple of incisores of the lower-jaw; then come those of the upper-jaw. After these the two molar teeth nearest to the lateral incisors of the lower-jaw appear; then the first molars of the upper-jaw; after which come the lower two canine; then the upper canine; then the two second molar of the lower-jaw, and afterwards the corresponding molar of the upper-jaw. The period occupied in the process is about two years from the appearance of the first tooth.

The first formed of the permanent teeth are the anterior molares, on which the first point of ossification may be seen at birth. At about the age of twelve months the ossification on these teeth has proceeded to a considerable extent; also on the permanent incisors, and it has commenced on the lower cuspidati, the upper ones being generally two or three months later. About the time when all the temporary teeth have made their appearance, ossification is found on the points of the bicuspides, and the bony shells of the teeth before mentioned have acquired considerable size.

Most of the permanent teeth are larger than those which precede them. They are placed during their progress a little behind them; hence they are confined within the segment of a smaller circle; consequently, as they approach more and more nearly to their ultimate size, they must become very much crowded in the jaw. 'The examination of the maxillary bone of a child of about five years old,' observes Mr. Bell, 'will show this fact in a very striking manner. At this period the jaws being considerably deepened by the development of the alveolar processes, the sockets in which the permanent teeth are lodged will be found placed beneath those of the temporary, some higher than others, and the bony shells are closely packed in such a manner as to occupy the least possible space. Thus, in the upper-jaw, the central incisors are situated immediately beneath the nose, the lateral incisores thrown back behind the points of the cuspidati, and the bases of the latter scarcely a quarter of an inch below the orbit: in the lower jaw the cuspidati are placed at the very base of the bone, with only a thin layer beneath them; but the crowding is much less considerable than in the upper jaw, from the smaller comparative size of the incisores.

'At from six to seven years of age the whole of the permanent teeth are more or less ossified, excepting the dentes sapientiæ; so that, previously to the shedding of any of the temporary teeth, there are at this time no less than forty-eight teeth in the two jaws; namely, twenty deciduous, the whole of which are perfected, and twenty-eight permanent, in different degrees of development, within the bones.'

At a particular epoch of human life, the temporary teeth are exchanged for a more numerous set, of a stronger and more durable structure, and of increased power of mastication. The original teeth become loose in their sockets; their roots are eaten away; their crown crumbles and recedes from the gums, and at last they fall out. This change takes place in the temporary teeth exactly in the order in which they were originally formed, and in which they cut through the gums. Thus the central incisores of the lower jaw fall away first, then those of the upper jaw, then go the interior lateral incisores, and so on.

The mode in which this change is effected, which constitutes the shedding of the teeth, is by a process of absorption. The anterior parietes of the cavities in which the permanent teeth are contained are removed by the absorbent vessels, in consequence of which the teeth are allowed to advance: next the sockets, then the roots, and lastly the crowns, of the temporary teeth are absorbed. This absorption cannot be solely the effect of pressure produced by the advancing permanent teeth; for the process goes on when such pressure cannot possibly have existed; it is, in part at least, like the preparation of the cell for the reception of the permanent pulp, a true process of anticipation. Neither do the advancing permanent teeth displace the receding deciduous teeth; but the jaw grows and enlarges consentaneously with the increasing bulk and number of the teeth which it is destined to receive.

The change of the temporary for the permanent teeth commences, in the majority of instances, at about seven years of age, 'though,' says Mr. Bell, 'I have occasionally known it to occur as early as five, and as late as eight years and a half. The first permanent molares usually pierce the gum before the loss of the temporary central incisores, and their appearance may be considered as indicative of the approaching change. The following are about the medium periods at which the different permanent teeth are generally cut, but so irregular are they in this respect, that comparatively little dependence can be placed on such a statement. Those of the lower are here indicated, and they most commonly precede the upper by about two or three months.

Anterior molares	6½ years
Central incisores	7 „
Lateral incisores	8 „
Anterior bicuspides	9 „
Posterior bicuspides	10 „
Cuspidati	11-12 „
Second molares	12-13 „
Third molares, or dentes sapientiæ	17-19 „

Such are the main phenomena which relate to the process of dentition when this operation is performed in a perfectly natural and healthy manner. But this process is exceedingly apt to become deranged, producing evils in the system often most serious, and even fatal, and the preceding account of the natural process will enable us readily to understand the nature, extent, and causes of the diseases which so often result from the morbid progress of the function.

(Bell *on the Anatomy, Physiology, and Diseases of the Teeth;* Ashburner *on Dentition, and some co-incident disorders;* Meckel, *Man. d'Anat.;* Serres, *Nouvelle Théorie de la Dentition;* De la Barre, *Seconde Dentition.*)

DENTITION, ANORMAL, DIFFICULT, DISEASES OF. (*Difficult Teething.*) Every infant, at the period of birth, is imperfectly organized. There is no structure and scarcely any tissue of its body which has attained its due consistence and firmness. Several of the most important organs are entirely rudimentary, and there is not one that is perfect either in structure or function. Development is the great process unceasingly carried on at every point of the system. The capillary arteries, the immediate agents by which this process is effected, are the masons and architects by which the various structures are built up; the modellers, by which the due form and the relative bulk of the different organs are communicated and preserved, are the absorbent vessels; and the regulators and controllers of these agents, and of every other power concerned in carrying on the processes of nutrition and growth, are the nerves, and the great central masses in connexion with the nerves, the spinal cord and brain. Hence the sanguiferous system in all the varied states in which it is ministering to the function of secretion is in incessant activity, and the absorbent and nervous systems must necessarily be in a proportionate state of activity. It is indispensable to the due progression of the formative processes that there be maintained a perfect balance between all these varied and complex actions: a failure or a diminution in the action of one system, or a disproportionate energy in the action of either, will at once disturb that balance, and produce the most serious evils in the economy. At the age of infancy such a disturbance the more readily occurs, on account of the imperfect condition of every portion of the organism, no part having yet acquired the firmness of maturity, nor the power of resistance which belongs to mature and perfect structures.

Among the organs the first to be developed after birth are the teeth, and the jaws which are to contain the teeth. These organs are agents indispensably necessary to the performance of a primary and essential function, that of nutrition. Before birth there are no teeth, the nutrition of the fœtus being carried on by nutritive matter derived from the mother. For a considerable period after birth there are no teeth, the nutritive matter by which the infant is to be nourished being still formed for it by the mother. But the infant is ultimately to acquire an existence wholly independent of the mother, and from the moment of its birth, nay, long before the period of birth, processes of preparation are going on in its system which have for their object the formation of an apparatus destined to enable it to prepare and digest food independently of its parent.

This apparatus, from its most rudimentary state, possesses a highly organized and delicate structure; and it is placed in a position in which its progressive development is attended with peculiar difficulties, which at first view would appear insurmountable. A bony structure has to be formed and to make its way through the dense substance of the gums; at the same time the jaws have to attain a bulk fitted to receive these structures when duly prepared and evolved. The too hasty evolution of the teeth, or the too tardy growth of the jaws, produces grievous evils in the system, by the disturbance of that balance which has been already stated to be indispensable to the orderly and safe progress of the developmental actions.

Supposing the formation of the teeth in the jaws to have proceeded quite naturally up to the time proper for their evolution, at that period they are included in a firm membranous envelope, and are covered by the thick and dense gum. When the process of dentition proceeds in a natural manner, the membrane and the gum are absorbed in order to make way for the passage of the teeth. This absorption is accomplished by a stimulus communicated to the absorbent vessels, either by the mere presence of the tooth without direct pressure, or by a moderate and gradual pressure produced by the advancing tooth.

This process, even when accomplished in a perfectly natural manner, is almost always attended with some degree of local inflammation. The gum itself is manifestly red and swollen, and is apparently painful and itching, indicated as well by the obvious occasional uneasiness of the infant, as by the constant desire it evinces to press against the gum everything it can lay hold of. The irritation of the gum extends to the salivary apparatus placed in the mouth and its neighbourhood, as is proved by the increased flow of saliva, which is commonly more or less altered in quality, as well as increased in quantity, being thicker and more tenacious than the natural secretion. These symptoms of local irritation are usually accompanied by a slight degree of constitutional disturbance, the skin being commonly hotter and dryer, the face occasionally flushed, the bowels more relaxed, and the infant itself more restless and fretful than natural. The irritation of the gum when restricted within a moderate limit seems to be the necessary consequence of the developmental process that is going on. The effect of the local irritation, namely, a determination of blood to the salivary apparatus, occasioning an increased flow of saliva, and that of the constitutional disturbance, namely, a determination of blood to the mucous membrane of the intestines, occasioning diarrhœa, appear to be remedial rather than morbid,—to be evacuations established by nature for the purpose of relieving over-distended vessels and over-excited nerves.

When the infant is in a state of sound health, and when the process of dentition proceeds in a natural manner, the local and constitutional evils attending the evolution of teeth amount to no more than have now been described; but when the infant is in a state either of congenital or acquired disease, or when the natural course of the process of dentition is disturbed, evils result always serious and often fatal.

Suppose that the formative proceeds faster than the absorbing process; that the teeth grow with a rapidity with which the action of the absorbents is not commensurate, the necessary consequences are, that the tooth is forced against the gum, that the investing membrane is compressed between them, and that this pressure is communicated to the delicate and soft pulp on which the organization of the tooth is still proceeding. The effects of the irritation thence induced will vary according to the degree of pressure, the sensibility, and irritability of the individual, and the predisposition of its natural or acquired constitution to disease. In some it may produce only a slight aggravation of the local and constitutional ailments already described; in others it may produce every form of disease to which infancy is subject, attended with every symptom appertaining to such diseases.

In the infant, the mucous membrane which lines the alimentary canal, from its commencement in the mouth to its very termination, is highly sensitive and irritable; the membrane which covers the external surface of the body, the skin, which possesses essentially the same structure as the internal lining membrane, and between which there is the most intimate sympathy, is alike sensitive and irritable; the mucous membrane which lines the air-passages, and which forms the air-vesicles of the lungs, is scarcely less sensitive and irritable. Morbid irritation excited in any of these extended and most important surfaces is readily propagated to the great nervous centres, the spinal cord and brain, in which are induced, often with extreme rapidity, some of the most formidable diseases to which the human body is subject; and from diseases established in the spinal cord and brain disease is reflected back upon the muscles. Thus the most prominent diseases produced by anormal (irregular) dentition have their seat in the stomach, the intestines, and all the organs which form a part of the digestive apparatus; in the external skin, in the air-passages and lungs, in the spinal cord and brain, and in the muscles of voluntary motion.

The irritation attendant on anormal dentition commences in a portion of the mucous surface of the digestive apparatus, and from its source in the mouth it is readily propagated to the stomach, intestines, and liver, producing in the stomach pain, nausea, vomiting, flatulence, acid eructations, &c.; in the intestines, griping pain, flatulence, diarrhœa; in the liver, disordered secretion of bile, in consequence of which the fæcal evacuations are greatly altered in quantity and quality, being at one time too scanty, and at another time too copious, sometimes light or clay-coloured, and at other times dark-green, spinach-like, and preternaturally fœtid, mixed with large quantities of unhealthy viscid mucus. There is also a great proneness to diseased action of the pancreas, owing to its intimate connexion with the salivary apparatus; and there is reason to believe that several states of diarrhœa, so common at the period of dentition, are dependent on a morbid secretion of the pancreatic juice. The urine at the same time is often scanty and turbid, and there is a purulent discharge from the urethra, attended with difficulty and excruciating pain in passing the water

The external skin sympathizing with the irritation set up in the internal mucous surface, is constantly affected with eruptions of various names and natures, sometimes attacking the scalp, sometimes surrounding the lips and extending over the face, and at other times covering the whole body.

The irritation is propagated from the mucous membrane of the mouth and fauces to that of the air passages and air vesicles, inducing hurried, difficult, and painful respiration, frequent cough, and all the symptoms of inflammation of the lungs, ending frequently in the development of tubercles, and the production of other organic and fatal diseases of the lungs.

There is the closest possible connexion between the skin, the digestive surface, the respiratory surface, and the great nervous centres, the spinal cord and brain. Any irritation excited in the former is readily propagated to the latter. There is a direct route by which the intercourse is established. The nerves proceeding from all these surfaces take a direct course to the spinal cord and brain, where they communicate the irritation which they receive, and excite, among other diseases, more especially that which constitutes hydrocephalus acutus, or water in the head. This disease, among the most formidable to which infancy is subject, and the most common cause of which is anormal dentition, is preceded by the start in sleep, the slight chill, hardly amounting to rigor; the flushed face; the sudden, darting, transient pain in the head; the unusual drowsiness; and then come the sudden start from that deep sleep, with a loud scream; the injected eye, the dilated pupil, followed by the constant rolling of the head upon the pillow, the loss of sight, and the progressively increasing insensibility, and coma. The irritation thus produced in the spinal cord and brain is quickly reflected back upon those muscles the action of which depends upon an influence derived from these great nervous centres—the muscles of volition, which are affected with twitchings, spasms, convulsions, sometimes passing into chorea, epilepsy, catalepsy, and tetanus.

When the acute symptoms induced by inflammation of the brain, followed by effusion, pass away without immediately destroying life, it is often only to leave a state of permanent idiotcy far worse than death.

Besides all these evils produced by anormal dentition, there is one specific disease that results from it of a most formidable nature, and often fatal. This affection may be termed the disease of development; it is commonly called infantile remittent fever. The accession of this disease is denoted by languor, lassitude, chilliness, shivering, succeeded by heat of skin, perspiration, and accelerated pulse. The little patient is spiritless, discontented, and fretful. Yawning, sighing, marked increase of irritability, unusual mutability of temper, loss of appetite, perhaps alternating with importunate desire for food, which when given often cannot be eaten, some peculiarity of respiration, and at last impatience of light and sound, accompany or quickly follow a distinct febrile attack. The feverish symptoms disappear or remit soon to recur or exacerbate; and these remissions and exacerbations are characteristic marks of the disease. The colour of health is gone, and the colour often changes. A flush of the countenance, preceding slight rigor and paleness of face, is succeeded by slight headache. There is a remarkable desire to pick, principally the nose, sometimes the lips and fingers, often other objects; frequently the breath is offensive, and cough, headache, and griping pains in the bowels are present, with more or less of sickness, faintness, sighing, starting, more particularly in sleep, moaning in sleep, grating the teeth, sleeping with the eyes half open, and a relaxed or on the contrary an exceedingly constipated state of the bowels. Occasionally the pupils suddenly dilate, perhaps only one pupil, and then as suddenly contract. 'Perspiration is a part of fever, and this is sometimes observed night after night succeeding to no very remarkable heat of skin, but to a great drowsiness, which in itself is a proof of exacerbation, though the accelerated pulse of fever may be wanting. The moaning, picking, or starting, with any of these conditions, constitutes part and parcel of this disorder. Sometimes the ailment is slight in degree, or it may assume an acute form with all the tire and anger of a hot fever. Sometimes it is typhoid in its type. Whatever character may be assumed by this disorder, it is coincident with an irregular course of the development of some organ of the body; and commonly the irregular development is in the nutrient organs, and of these most commonly the teeth and jaws.'

Fatal disease may arise from anormal dentiti
before the usual period of cutting the teeth.
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and in the membrane that envelops the whole rudi
tooth, may compress the dental and even the
nerves; and pressure on these nervous tendrils ma
certain conditions, be tantamount to pressure ap
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produce a sufficient degree of pressure to excit
degree of irritation in the brain, producing even
vulsions. Many striking cases of this kind are o
of which the following brief history may serve a
ample. A fine healthy-looking child, of a strong
mother, died, at thirteen weeks of age, of a convu
The cause of death was ascertained, at the earnes
the mother, by a careful examination of the bo
death. The internal organs, for the most pa
healthy; the stomach contained only a little m
mucous surfaces of the intestines were free from
the contents of the thorax were healthy. In the
membranes that envelop the brain, and more espec
pia mater, were more tinged with blood than nat
the brain itself was healthy. The jaws were care
amined. 'The capsules of the incisor teeth were l
very vascular, much more advanced than usual.
lancet, the cartilaginous rim of the lower jaw was a
to be removed, with a view of exposing the capsul
molar teeth; but these were so unusually distend
fluid, that the instrument cut into them and le
This was an example of development proceeding too

It is common for the symptoms of irritation whic
on the evolution of the teeth to appear about the
fourth month; they usually precede the appearanc
teeth by several weeks, and they occasionally sub
then re-appear a short time before the tooth make
through the gum.

Disease arising from anormal dentition is not
to the period of infancy. In children of irritable
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irruption of the second or permanent teeth is so
attended with serious and even fatal disorders. N
the period of adolescence is by no means free fro
diseases produced by this same cause: for in cons
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development of the jaws, at the period when th
sapientiæ are about to appear, delicate, nervous, and
subjects are not unfrequently affected with swellin
parotid and submaxillary glands, painful and s
periodical affections of the ear and face, slight or
ophthalmia, irregular convulsions, epilepsy, and
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Animals are not afflicted with these or any a
evils from the evolution of their teeth, and they
duced in the human species altogether by the u
circumstances in which the infant is placed in the
artificial state of society. The chief causes of these
evils are—1. Food, unnatural in quality and too
quantity. It is seldom that an infant lives solely
natural food (human milk) during the early mont
existence. If it take other food, that food is either
or it is not. If it be not digested numerous ailm
produced; if it be digested the system is too hig
rished, and becomes too full of blood, from which i
to see that any one or any number of the diseas
have been described may result. 2. The practice
mon in this country of keeping the heads of inf
young children very warm by clothing, by their
flannel caps, and by having their heads almost co
wrapped in a warm woollen shawl, from the dread
catching cold. The naturally great determination
to the head is too much favoured by this practic
co-operates more powerfully than may at first view
parent with the other circumstances that conspire
duce disordered dentition. 3. The confinement of
in close and heated apartments, in the impure air
towns and cities without exercise. Such children i
all the evils of dentition are most frequently prod
the severest forms, are deprived of the natural s
afforded to the varied processes of growth by pure
active exercise.

The treatment of the various and formidable diseases produced by anormal dentition can never be judiciously conducted without a constant reference to the causes on which they depend. Without a proper regulation of the diet, clothing, air, exercise, and the state of the bowels, nothing can be effectually done to prevent the occurrence of the most formidable of these evils. When they are actually present no remedy can be other than palliative which does not aim at two things; first, the entire correction of every thing ascertained to be faulty in the diet, clothing, &c. &c.; secondly, the removal of pressure upon the nerves, produced by the advancing and unliberated tooth, which occasions all the mischief. 'As soon therefore as any of the affections now described, or any others which can possibly be supposed to arise from this cause, make their appearance, the gums should be carefully examined, and wherever there is any unusual redness or turgescence, and especially if it occur over the part where the next tooth is expected to appear, the including parts should be freely and effectually divided. It is not sufficient that the incision should merely pass through the gum, the lancet must be carried down to the rising tooth itself, and only stopt when the resistance of its point is felt against the edge of the instrument. The form of the gum-lancet should be broad and somewhat rounded, and its edge extremely sharp. The only precaution necessary in its use is so to direct it in making the incision that the cord of connexion between the temporary and permanent tooth shall be carefully avoided, which is readily insured by directing the edge rather towards the outer part of the gum.

'The prejudices of former times against this simple and most efficacious operation are fast yielding to the frequent evidence of its harmlessness and utility. It is impossible for the most prejudiced to witness the effects which continually result from it without becoming a convert to its use. In the midst of the most imminent danger, when death has almost been anticipated as the only relief from severe and hopeless suffering, this simple and trifling operation has, in innumerable instances, restored the little sufferers to their parents in a state of ease and safety, and in so short a space of time as would scarcely have appeared credible.'

There are few cases in the management of disease which require more prompt decision in the application of remedies or more judicious selection of remedial agents than some of the sympathetic affections which have been now adverted to. Life will often depend on the choice of the remedy which is made, and the cautious boldness with which it is administered. It is not possible here to pursue the discussion of this subject further than merely to add that the bowels should be constantly kept in a somewhat loose state; that if a slight degree of diarrhœa be naturally established, nothing whatever should be done to check it; that even when the purging becomes considerable, it should be only moderated, not stopped; and that the most extreme caution should be exercised in meddling with any eruptions upon the skin. (Bell *on the Teeth;* Dr. Ashburner *on Dentition;* Dr. John Clarke's *Commentaries on the Diseases of Children;* and Copland's *Dictionary of Practical Medicine in loc.*)

DEODAND (Deo dandum, given to God). By deodand is understood whatever personal chattel occasions the death of a man without the default of another, and also the instrument with which murder is committed. In England deodands are forfeited to the king, to be applied to pious uses and distributed in alms by his high almoner; but the crown most frequently granted the right to deodands, within certain limits, either to individuals for an estate of inheritance or as annexed to lands, in virtue of which grants they are now claimed.

Blackstone supposes 'that the custom was originally designed in the blind days of popery as an expiation for the souls of such as were snatched away by sudden death, and for that purpose ought properly to have been given to holy church, in the same manner as the apparel of a stranger who was found dead was applied to purchase masses for his soul.' But it is perhaps more reasonable to imagine that it was a civil institution intended to produce care and caution on the part of the owners of cattle and goods, and that the subsequent application of the things forfeited has been mistaken for the origin of the law itself. The custom was also a part of the Mosaic Law. *(Exod.* xxi. 28.) In England it has prevailed from the earliest period, and there is no trace of the deodands having been applied to pious uses. The custom is thus mentioned by Bracton, one of the earliest writers on English law, who lived in the reign of Henry III. 'Omnia quæ movent ad mortem sunt deodanda,' which is Englished in the 'Termes de la Ley,'

> What moves to death, or kill'd the dead,
> Is deodand, and forfeited.

A different rule prevails when the thing occasioning accidental death is at rest, and is composed of several parts, and when it is in motion. For instance, if a man, in climbing up the wheel of a cart, falls and is killed, the wheel only is forfeited; but if the cart is driven against the man, and the wheel goes over and kills him, not only the wheel but the cart and its loading are forfeited. In cases of homicide, the instrument of death is forfeited, even if it belongs to an innocent party, for which reason, in all indictments for homicide, a value is placed on the weapon used in killing, that the king or his grantee may claim the deodand, for it is no deodand unless it be presented by a jury of twelve men. In modern times juries have taken upon themselves to mitigate these forfeitures, and it is common for the coroner's juries to award a given amount as a deodand, less than the value of the chattel; and though it is said that this finding is hardly warrantable by law, yet the court of King's Bench has usually refused to interfere on behalf of the lord of the franchise to assist so inequitable a claim.

DEOGHUR, a district in the province of Gundwana, forming part of the dominions of the Rajah of Nagpore, and lying principally between 20° and 21° North latitude. It is separated into two divisions, designated Deoghur above the Ghauts and Deoghur below the Ghauts. The division above the Ghauts is an elevated tract of country having the valley of the Nerbudda to the north, and the plains of Nagpore to the south. Its surface is undulating, hills and dales occurring in regular succession; the general direction of the hills is east and west. The division below the Ghauts lies to the south; it is crossed by several ranges of hills branching off from the Vindhyan chain. In other parts, situated between the Wurda and the Wyne Gunga, the country is open and undulating, and watered by numerous streams.

In the time of Aurengzebe, this country was in a very wild and unsettled condition; the Rajah was little more than the nominal head of numerous petty chiefs, and was tributary to the throne of Delhi. Shortly after that time, the Bhoonsla family obtained the chief power in this part of India, and Deoghur became the central part of their dominions. The title of rajah, with a small part of the revenue, was still allowed to the Goond princes, and the show of sovereignty, but without any of its power, is still given to the ancient royal family. The number of towns and villages in the upper division was 1241 in the year 1824, and in the lower division 2075 in 1825; the population of the two divisions was in these years 145,363 and 572,972 respectively, and the revenue amounted to 19,04,828 rupees, or 190,483*l.*

Deoghur, the capital, is in 21° 43′ North lat. and 78° 35′ East long. It was formerly a place of some consequence, but has long fallen into decay.

DEOGHUR or BAIDYANATH, a place of great sanctity in the district of Birbhoom in the north-western extremity of Bengal, in 24° 32′ North latitude and 86° 40′ East longitude. At a particular season of the year, the roads leading to this place are covered with pilgrims of all ages, both male and female, each bearing a basket, containing the pilgrim's baggage and several small bottles filled with the waters of the Ganges, intended to be poured over the principal idol of the temple which they are about to visit. Some of the pilgrims take with them a larger stock of the sacred water than they require to satisfy their own devotional feelings; this surplus is made a subject of traffic with those who, coming from other parts of the country, have not been able to provide themselves with water from either of the Prayagas. The government imposes a small tax on each pilgrim, the exacting of which is justified, on the ground of its gratifying the natives, as an evidence of toleration on the part of their foreign rulers.

(Report of Committee of Commons on Affairs of India, 1832.)

DEOGHUR. [Dowletábad.]

DEPARCIEUX, ANTOINE (often written, but erroneously, De Parcieux), an able mathematician, was born in 1703 at the village of Cessoux near Nismes. His father was an humble peasant, and unable to afford him the least education; but the display of his precocious talents induced an opulent gentleman in his neighbourhood to place him in the College of Lyons, where his progress in his studies was rapid and striking, especially in the mathematical branches of science. After finishing his course in this institution, he repaired to Paris, without money and without friends; but he turned his talents to account by drawing sun-dials, and engaging in other employment of this kind, by which he was able to obtain a subsistence. His accuracy in these drawings being remarkable, he at length acquired an attachment to the pursuit, and obtained ample employment to secure him a comfortable livelihood. He afterwards appears to have turned his attention to machinery; and probably his talents were extensively employed in civil engineering and other collateral subjects. He died September 2nd, 1768, aged 65.

His publications were as follows:—

1. Tables Astronomiques, 4to. 1740.
2. Traité de Trigonometries Rectiligne et Sphérique, avec Traité de Gnomonique et des Tables de Logarithmes, 4to. 1741.
3. Essai sur les Probabilités de la Durée de la Vie Humaine, 4to. 1746.
4. Réponse aux Objections contre l'Essai (the last work), 4to. 1746.
5. Additions à l'Essai, &c. 4to. 1760.
6. Mémoires sur la Possibilité et la Facilité d'amener auprès d'Estrapade à Paris les eaux de la rivière d'Ivette, 4to. 1765.

Besides these separate works, he published sixteen memoirs amongst those of the Paris Academy, between the years 1735 and 1768.

Déparcieux was created Royal censor and member of the Academy of Sciences in Paris. He was also a member of the Academies of Berlin, Stockholm, Metz, Lyons, and Montpellier.

DEPARTMENT (or in French **DÉPARTEMENT**), a territorial division of France, introduced by the States General in the latter part of the reign of Louis XVI. We shall take this opportunity to give some account of the territorial divisions of France as they exist at present.

A commune is the smallest territorial division in the present system of France. In the rural districts and in the smaller towns a commune may be considered as equivalent in area and population to our ordinary parishes, or to the townships into which our more extensive parishes are divided. It is only in respect of area and population that we compare the communes of France with our own parishes: the two divisions were made for different purposes, the parish being an ecclesiastical division, which existed in France as well as in England, while the commune was for civil or military purposes. There is moreover this difference, that while our larger towns and cities (especially those whose extent and importance are of an antient date, such as Norwich, Exeter, Bristol, or York) consist of several parishes, the larger towns of France, with the exception of Paris, form but one commune. The term commune, which is nearly equivalent to corporation, is of antient date. When Louis VI. (le Gros) sought to raise from the towns of the royal domain a burgher militia as a substitute for the troops of his rebellious and disorderly vassals, and in order to form an alliance between the crown and the commons by sheltering the latter against feudal oppression, he formed the freemen inhabiting the towns into communautés (in the Latin of the middle ages communitates) or corporations, gave them power to raise troops from among themselves, and conferred upon a municipal body, constituted for the purpose, an authority over these troops similar to that which had been exercised over the baronial levies by the great lords themselves, and by their subordinates, the counts, or governors of towns, the viscounts, castellans, &c. These are not to be regarded as the first municipal corporations which had existed in France. Under the Roman dominion there were many; but during the distracted reigns of the later Carlovingian princes, these corporations had mostly, if not entirely, become extinct. The militia of the towns was designated in the Latin of the middle ages communiæ (communes), communitates parochiarum (the commonalties of the parishes), or burgenses (the burghers or burgesses). Where the town consisted of several parishes the troops were formed into smaller bodies according to their parishes, and marched into the field in those divisions, the parochial clergy accompanying their respective parishioners, not to join in the conflict, but to discharge their spiritual duties of preaching to them, confessing them, and administering religious rites to the dying. Some communes consisted of a number of small towns united under one corporation charter. In process of time the greater barons followed the example of the king, in order to become independent of their vassals, among whom the like insubordination existed as among the vassals of the king.

The municipal officers were generally designated Scabini or Echevins, and the principal of them had the title of Major or Maire (Mayor). The communes enjoyed many rights and exemptions; they fortified their respective towns, and were, in fact, so many municipal republics scattered over the kingdom, constituting the most substantial bulwark both of the public liberty and the rights of the crown against the encroachments of the nobility. As however the regal power gained strength, the influence and importance of the communes declined. Their militia came into disuse when the kings of the race of Valois began to form a standing army; and upon various causes or pretexts many of the incorporated towns lost their charters, and returned under the jurisdiction of their feudal lords. Under the present system, the whole of France, the country as well as the towns, is divided into communes, and the local administration and the management of the revenues of each are placed under a municipal officer, who may be compared perhaps with our constable or headborough, but who bears the same title, that of Maire, which was borne by the head of the antient communes. He is appointed by the king, or the prefect of the department, and is assisted by a communal council, the members of which are chosen by the communal electors, who are those inhabitants who pay most direct taxes, in the proportion of one-tenth to the whole population. (*Loi sur l'Organisation Municipale*, 21 Mars, 1831.) As the plan in France has been to assimilate the divisions for civil and ecclesiastical purposes, we believe that the communes may in the rural districts and the smaller towns be regarded as ecclesiastically equivalent to our parishes. Each has its church and its curé or clergyman. Some have also succursales or chapels of ease. The larger towns have several churches.

A canton is a division consisting of several communes, over which a judicial officer entitled justice de paix (justice of the peace) is appointed. These functionaries receive a small salary; they decide civil suits if the amount in question is small: and all suits whatever must be heard by one of them (in order that he may if possible bring the parties to an agreement) before the cause is carried into a higher court. The cantons into which the arrondissements of St. Denis and Sceaux (comprehending the metropolitan department of the Seine, beyond the limits of Paris) are divided, contain from six to thirteen communes each, or upon the average nearly ten each; but the cantons which are farther from the capital contain a greater number: the average of France is nearly fifteen communes to a canton.

An arrondissement (circle) comprehends several cantons, seven on the average of France: the two arrondissements of the department of the Seine above-mentioned have each four cantons. The municipal officers of the arrondissements will be noticed presently.

A department consists of several arrondissements, usually four or five: some departments have only three arrondissements; others have as many as six. The substance of the following account of the departmental administration we take from the *Dictionnaire Universel de la France*. Although it immediately applies to the early part of the reign of Bonaparte, it is (in the leading points at least), we believe, applicable to the present state of France. There are at present in France eighty-six departments.

At the head of each department is an officer entitled préfet (prefect), who has alone the administration of the local government. His usual residence is at the departmental capital; but he makes every year a circuit of inspection through his department, and gives an account of the result of his circuit to the proper officer of the central government at Paris. He is not allowed to be absent from his department without the permission of the government, which he obtains through the ministre de l'intérieur (minister of the interior or home secretary). He is assisted in some of his duties by a conseil général de département (general departmental council), composed of sixteen, twenty, or twenty-four members, from different parts of the department, elected by the assemblies of arrondissements, which consist of the highest taxed inhabitants, in the proportion of 1 to 1000. This council assembles annually at a time fixed by the government, nominates one of its members president, and another secretary, and proceeds to its business, which must not occupy a session of more than fifteen days. The business of the council is to apportion between the arrondissements the direct taxes which are required by the general government; to hear and determine upon appeals made by the councils of arrondissements against this assessment; to levy, within certain limits fixed by law, an additional tax, destined, like our county rates, to meet the expenses of the local administration; to audit the account yearly rendered by the prefect of the expenditure of this local revenue; and to express, in a report addressed to the minister of the interior, an opinion upon the condition and wants of the department. The prefect is further assisted by a conseil de préfecture (prefectorial council), consisting of three, four, or five members, which decides upon individual appeals for an entire exemption or a reduction of the direct taxes; and upon questions arising from the execution of public works, whether arising between the government and the contractors as to the particulars of the contract, or between the contractors and parties who complain of injuries sustained at their hands, and upon the indemnity due to individuals whose possessions have been required for carrying on public works. The prefect when present at the sittings of this council acts as chairman, and in case of an equal division has a casting vote.

The arrondissements are under the administration of a sous-préfet (sub-prefect), subordinate to the prefect of the department, to whom he addresses a memorial on anything of importance to the arrondissement, assigning the reasons on which his opinions are founded. He receives and settles the accounts of the maires of the several communes. He is assisted by a conseil d'arrondissement (council of the arrondissement), consisting of eleven members, elected by the cantonal assemblies, consisting of the highest taxed inhabitants, in the proportion of 1 to 100. This council, like that of the department, meets at a time fixed by the government, and has a session limited to fifteen days: it has a president and secretary appointed by and from itself: its duties are—to apportion between the several towns and villages the direct taxes to which the arrondissement has been assessed by the departmental council; to give an opinion, with the reasons subjoined, upon appeals of towns and villages against the proportions levied upon them; and to audit the sub-prefect's account of the expenditure of that part of the departmental revenue assigned to meet the expenses of his administration; and to make a report to the prefect of the wants and condition of the arrondissement similar to that which the departmental council addresses to the minister of the interior.

As the capital of the department is also the chief place of an arrondissement, the prefect, and the prefectorial (not the departmental) council discharge in that arrondissement the duties which in the other arrondissements are assigned to their respective sub-prefects and councils.

The departments and arrondissements are electoral divisions. The members of the Chamber of Deputies are chosen for the departments, not for single towns, however important or populous; so that the deputies are all, according to our phrase, county members. The electors of each department are divided into colléges electoraux: each arrondissement has one of these, and each electoral college elects one deputy. There are 459 deputies for all France, and the number of electors is about 200,000 in all. Some departments have only between 300 and 400 electors, and return two deputies; that of the Seine reckons above 15,000, and returns 14 deputies. Most of the others have between one and two thousand, and return from four to six deputies each. The property qualification for an elector is the annual payment of 200 francs of direct taxes, and that for a deputy 500 francs. An elector must be above 25 years of age, and a deputy above 30. (*Loi rélative aux Elections, 19 Avril*, 1831.) The elections are direct, and not graduated, as those under the constitution of the year VIII., or of the present Spanish Cortes.

Each arrondissement has a court of justice, entitled tribunal de première instance, which, except in a very few cases, has its sittings at the capital of the arrondissement. These courts commonly consist of three or four ordinary and two or three supplementary judges: a few arrondissements which include large towns, such as Marseille or Bordeaux, have a considerably greater number of judges, who are divided into two or more sections. To each court there is a procureur du roi, or attorney general; and where the court consists of two or more sections, there are deputy attorneys. Each department has a tribunal criminel (criminal court), or cour d'assize (assize court), consisting of a president, who is a counsellor of the cour royale, to the jurisdiction of which the department is subject, two ordinary and two supplementary judges: to each court is attached a procureur du roi, or attorney general, and a greffier, or registrar. These courts, except in a few instances, have their seat at the capital of the department. Besides these courts, there are in different parts of France twenty-seven higher tribunals, called cours royales, consisting of from twelve to thirty-three salaried judges. Each of these courts has under its jurisdiction several departments. There is an appeal from these courts on questions of law, not of fact, to the supreme court, cour de cassation, at Paris. The departments are also formed into nineteen divisions militaires, or military districts: the head-quarters of these districts are fixed at some important town, usually at the capital of one of the included departments.

A department usually constitutes an ecclesiastical diocese. In a few instances two departments are comprehended in one diocese; and in one or two cases, a department is divided between two dioceses. The dioceses of France amount to eighty, of which fourteen are archbishoprics, and sixty-six bishoprics.

The instruction of youth in France being under the surveillance of government, has occasioned an arrangement of territory with a view to this object. Twenty-six districts, coincident with those respectively subject to the cours royales (except that the Island of Corsica is united to the departments subject to the cour royale of Aix), are under the direction, in matters relative to education, of as many local administrations or academies, which administrations are subject to the control of the great central body, the University of France, which has its seat in Paris. Each academical district is under the superintendence of a rector and an academical counsel, who inspects the schools of the district, and report thereon to the central administrative body. This body consists of a grand-master, who bears the title of minister of public instruction, and has a seat in the cabinet, and of a council composed of ten members. The province of the council is to superintend the business of instruction through the country generally, to judge and remove incompetent teachers, &c. The rector has the appointment of the teachers in the public colléges, or high schools, throughout France, upon the recommendation of the local authorities, and after strict examinations instituted by them.

In extent, the departments of France, with the exception of the metropolitan department of Seine, are more uniform than the counties of England. The department of Gironde, which is the largest, comprehends an area of 3954 square miles, about equal to the English counties of Devon and Cornwall. The department of the Seine comprehends an area of 183 square miles, not much greater than the area of Rutlandshire, and not much above two-thirds of that of Middlesex. The department of Tarn and Garonne, the smallest except that of Seine, comprehends an area of 871 square miles, and is rather larger than the counties of Cambridge, Hereford, Nottingham, or Leicester. The average extent of a department is 2380 square miles, rather greater than the area of Devonshire, but rather less than that of Lincolnshire. A great part of the French departments take their names from the mountains or rivers or parts of rivers which are within their limits.

The subdivisions of a department may, for their relative size, be compared with those of the county of Kent, the French arrondissements corresponding to the Kentish lathes, the cantons to the hundreds and liberties, and the communes to the parishes. The hundreds are however smaller in proportion and more numerous than the cantons. For the origin of the communes, see Raynouard, *Histoire du Droit Municipal en France*, 1829.

DEPARTURE, a nautical term for the number of miles which a ship has sailed east or west. Thus, supposing a ship's course to be oblique to the meridian, there is a right-angled triangle, of which the hypothenuse is the course sailed over; one side on the meridian is the difference of latitudes of the beginning and end of the course (reduced to miles), and the other side, perpendicular to the meridian, is the *departure* (so called). Its use is to get a rough notion of the quantity by which the ship's longitude has changed, supposing the whole course so small that the portion of the sphere which contains the triangle may be considered as a plane. For the number of miles in the course multiplied by the sine of the angle which it makes with the meridian gives the departure in miles, which can be turned into minutes and seconds of longitude by dividing by the cosine of the latitude, and counting 69½ miles to a degree in the result. But the rough purposes which this process answers are sufficiently well consulted by the tables which are to be found in all works of navigation.

DEPLOY, to extend in a line of small depth, an army, a division, or a battalion which has been previously formed in one or more columns: this may be done either for a review or preparatory to making a charge upon the enemy.

DEPORTATION. (Civil Law.) [BANISHMENT.]

DEPOSITION in its extended sense means the act of giving public testimony, but as applicable to English law the word is used to signify the testimony of a witness in a judicial proceeding reduced to writing. Informations upon oath and the evidence of witnesses before magistrates and coroners are reduced into writing in the very words used by the witnesses, or as near as possible thereto. Evidence in the Court of Chancery is taken in written answers to interrogatories, which are also in writing, either by commissioners appointed by the court for that purpose in the particular cause, if the witness resides at a greater distance from London than 20 miles, or if he resides nearer or is otherwise willing to appear, before the examiners of the Court of Chancery. The course of the Ecclesiastical Court following the practice under the civil law, is also by written interrogatory and answer. The Court of Chancery has power to grant a commission for the examination of witnesses residing abroad; and by the 1 Wm. IV., c. 22, extending the provisions of the 13 Geo. III., c. 63, the courts of law at Westminster, in actions pending before them, have power to order the examination of witnesses residing in any of his majesty's foreign dominions. When a witness is above the age of 70, or very infirm, or about to go abroad, so that his testimony may be lost before the regular period for his examination arrives, the Court of Chancery will order him to be examined *de bene esse*, as it is termed; that is, his examination is received for the present, and will be accepted as evidence when the proper time for taking the other evidence in the cause arrives, if the witness cannot be then produced. Courts of law do not possess similar power without the consent of both parties, but in order to enforce consent they will put off the trial at the instance of a defendant, if the plaintiff will not consent; and if the defendant refuse, will not give him judgment in case of nonsuit.

The Court of Chancery will also, upon bill filed by a person in the actual and undisturbed possession of property, and who has therefore no means of making his title the subject of judicial investigation, but which nevertheless may be materially affected by the evidence of living witnesses, allow the witnesses to be examined in *perpetuam rei memoriam*, that is, to perpetuate testimony. This is done in order that if any of the witnesses should die before the title to the property is disputed, their evidence may be preserved, otherwise a claimant might lie by until all the evidence against him was lost.

Depositions are not admitted as evidence in courts of law, unless the witness is either dead, or from some cause beyond the control of the party seeking to read the deposition, cannot be produced, or against any other persons than the parties to the proceeding in which they were taken, or claimants under them, and who had the opportunity of cross-examining the witness. In cases however relating to a custom, prescription, or pedigree, where mere reputation would be good evidence, a deposition may be received as against a stranger.

Depositions taken in Chancery *de bene esse* before answer put in, unless the defendant is in contempt for refusing to answer, are not admissible as evidence in a court of law, because until the defendant has answered he could not have an opportunity of cross-examining the witness; but the Court of Chancery will sometimes direct such depositions to be read. Such order however, while it concludes the parties, is not binding upon the court of law; of course, however, if the depositions be not read and the decision should be contrary to justice, the Court of Chancery would interfere as between the parties. [EQUITY, EVIDENCE.]

DEPRESSION (Algebra), the reduction of an equation to a lower degree, by dividing both sides of it by a common factor. Thus $x^3-x-6=0$ having been found to have 2 as one of its roots, is *depressed* to an equation of the second degree by dividing by $x-2$, which gives $x^2+2x+3=0$: that is, the two roots of the latter equation are the two remaining roots of the former.

DEPRESSION, ANGLE OF, is the angle by which a line drawn from the eye to any object dips below the horizon. [ELEVATION, ANGLE OF.]

DEPTFORD. [GREENWICH.]

DE'RBEND, a town in the Russian government of Georgia, on the Caspian Sea, about 42° 12′ N. lat. and 43° 20′ E. long. A branch of Mount Caucasus, which runs eastward to the Caspian Sea, terminates about a mile from its shores. As the mountain ridges in no other place come so close to the sea, the extremity of this steep and nearly inaccessible ridge offered a very advantageous point for erecting fortifications to command the road along the coast. The town is built on the declivity with which the range terminates, and forms a parallelogram about fifteen miles in length, but only 400 yards across. The walls which include it on the north and south are continuous to the sea. There are two large gates in these walls, through which the road passes, and which may be shut at pleasure. Hence the town derives its name, which signifies *the shut-up gates*. The walls, which are of great antiquity and very strong, are built of hewn stones, and not less than ten yards high, and in many places ten feet thick. They are fortified with round and square towers. To the west of the town is the citadel, on a more elevated eminence, which is also well fortified. Derbend contains about 4000 inhabitants, but some travellers make its population 12,000. Many coarse stuffs of silk and wool are made here. Its commerce by the Caspian Sea is not considerable, the harbour being so shallow that only boats can land, and vessels remain at a distance of nearly a mile from the shore. (Bieberstein and Reineggs.)

DERBY, the capital of the county to which it gives name, is in the hundred of Morleston and Litchurch, on the right or west bank of the Derwent, a feeder of the Trent, 114 or 115 miles NNW. of London, in a straight line, or 126 miles by the road through St. Albans, Dunstable, Stoney Stratford, Northampton, Market Harborough, Leicester, Mount Sorrel, and Loughborough: in 52° 55′ N. lat., and 1° 29′ W. long.

The municipal and parliamentary limits of the borough of Derby coincide, and comprehend the whole of the two parishes of All Saints and St. Werburgh, and portions of the parishes of St. Michael, St. Alkmund, and St. Peter. All that can properly be considered as the town of Derby is within the borough limits, which enclose an area of 1660 statute acres. (*Boundary Reports and Municipal Corporation Reports.*)

We may consider Derby as having risen from the ruins of the Roman station, Derventio, which was on the site of Little Chester, a hamlet just out of the boundary of the borough and on the opposite side of the river; or as having been a British town upon the British road, the Rykneld, or Icknield-street. Of this Roman station, Dr. Stukely was able to trace the wall quite round: the inclosure was oblong, and contained five or six acres; streets or roads were visible in the fields near it, which he supposed to be the suburbs. Coins of brass, silver, and gold, with antiquities of every kind, have been found, and the foundations of buildings are still sometimes discovered. There are the foundations of a Roman bridge over the Derwent at Little Chester, which may be seen when the water is clear, or felt with an oar. (Hutton, *Hist. of Derby.*)

In the time of the Saxons Derby was called Northworthige; the name of Deoraby (Derby) is said to have been given it by the Danes, by whom it had been captured. The etymology of this name has been much disputed: we think that the names of the town, of the neighbouring village of Darley, of the Roman station, Derventio, and of the river (the Derwent) all contain the same British or Celtic root, 'dwr,' water. Skinner (*Etymologicon Linguæ Anglicanæ*) derives Derwent from the above root, and ‘gwen’ or gwin, clear or bright; and the name of the town from that of the river, with the addition of the Anglo-Saxon termination ‘bye,’ a habitation. Derby was recovered from the Danes by Ethelfleda, countess of Mercia, and daughter of king Alfred, who took the castle by storm, A.D. 917 or 918. It was again taken by the Danes, and recovered from them by king Edmund I. A.D. 942.

In the time of Edward the Confessor, Derby was a royal burgh, with 243 burgesses, besides 41 who occupied land adjoining to the town; but at the time of the Norman survey the town was greatly reduced, having only 140 burgesses, 40 of whom were of inferior degree: 103 dwellings were waste and empty which had formerly paid taxes. The castle probably went to ruin about the same time: its site is still called the castle-hill and the castle-field. The last remains of the building are said to have disappeared about 250 years since. Hutton traced one of the mounds of it 80 yards long. From the time of the Conquest no historical event of interest is connected with Derby for several centuries. King Charles I. marched through Derby soon after he set up his standard at Nottingham; but in the same year the town was garrisoned by the parliamentarians under Sir John Gell, and appears to have remained in the hands of that party through the war; the garrison however was removed in 1645. In December, 1745, the young Pretender, with his army, entered the town, but staid only two days, retreating into Scotland on the approach of the duke of Cumberland. (Pilkington, *Present State of Derbyshire*; Lysons' *Magna Britannia*.)

The town of Derby has received many charters; one each from John, Henry VI., Edward VI., James I., and Charles I., and two from Charles II. The last charter of Charles II. was, up to the passing of the late Municipal Reform Act, the governing charter; but Derby claimed to be a borough by prescription. Under the new Act, Derby is divided into six wards, and has twelve aldermen and thirty-six councillors.

Derby is situated in a luxuriant and well cultivated vale, surrounded with beautiful scenery. The streets in the older parts of the town are narrow and winding. The houses are mostly of red brick, the public buildings of stone. The market-place is not large, but commodious; a new market, adjacent to the old one, and communicating with it by a passage under the new town-hall, was several years since built by the corporation. The churches of Derby are six, one for each of the parishes mentioned above, and another erected within the last few years. All Saints (antiently and still popularly Allhallows church) is on the east side of the town not far from the river: the body of the church is a Roman Doric edifice by Gibbs, opened for divine service in 1725; the tower, erected about the time of Henry VIII., is in the perpendicular English style and of peculiar beauty; its general arrangement and details are very fine. It is 178 feet high (Hutton), and its situation adds to the effect of its elevation and its fine architecture. This church was formerly collegiate. The new church, St. John's, is a handsome Gothic building, but in a bad situation. Another handsome new church (that of Trinity), on the London road, has been paid for by public subscription. The new town-hall, between the old and new markets, is a handsome building with an Ionic portico on an elevated basement through which is the communication between the old and new markets. The county-hall is a large but heavy building of freestone, erected in 1660; new buildings have been erected behind the county-hall for holding the assizes and quarter-sessions. The borough jail is a plain, substantial, and convenient building; it was formerly the county prison, but not admitting the classification of prisoners required by the recent act, it was sold by the county to the corporation, and a new county prison, with every convenience for classing the prisoners, has been erected.

Derby has a theatre and an assembly-room. There are places of worship for different classes of dissenters, one each for Presbyterians, Independents, Particular Baptists, Quakers, Roman Catholics, and Swedenborgians; two for the General Baptists and five for different classes of Methodists. There is a stone bridge of three arches, a wooden bridge and a towing bridge over the Derwent, and three stone bridges across the Markeaton brook, which flows through the town into the Derwent. Derby is lighted with gas, and supplied with water from the Derwent.

The principal manufactures are of silk and cotton goods, porcelain, jewellery, and ornamental articles made of the various kinds of spar found in the county, red and white lead, lead-pipe, sheet-lead, cast-iron, ribbed stockings, bobbin-net, and other lace. There is a considerable printing and publishing establishment and several printing offices.

In the early part of the eighteenth century the Italians exclusively possessed the art of spinning, or, as it is technically called, ‘throwing’ silk, and the British weaver had to import thrown silk at an exorbitant price. In 1702 a Mr. Crotchet erected a small silk-mill; but his capital and machinery were insufficient, and he failed. In 1717 Mr. John Lombe, who had in disguise and by bribing the workmen, obtained access to the machinery of the silk-throwsters of Piedmont in Italy, agreed with the corporation of Derby to rent, on a long lease, for 8*l.* a year, an island or swamp in the river Derwent, 500 feet long and 52 wide. Here he erected, at a cost of 30,000*l.*, an immense silk-mill, now the property of the corporation, the lease having expired. The foundation was formed with oaken piles 16 to 20 feet long, and over this mass of timber was laid a foundation of stone on which were turned stone arches that support the walls. In 1718 Lombe took out a patent, and was proceeding successfully in his business when he died, cut off, as it was thought, by poison, through the agency of an Italian woman, employed by the Italian manufacturers whose business he had drawn away to himself. He was succeeded in his mill by his brother William, and afterwards by his cousin Sir Thomas Lombe. The accounts of the machinery of this immense mill have been much exaggerated: the wheels have been said to amount to 26,000; Hutton's authority is the best, for he served an apprenticeship of seven years in the mill, and he reduces these wheels to 13,384. The whole was moved by one water-wheel. Many throwing-mills have since been erected at Derby, and this branch of industry may be regarded as the staple of the town. The cotton manufacture is of later introduction and of smaller extent. The manufacture of porcelain was introduced nearly a century ago; and the articles, both in design and execution, have been carried to a high pitch of excellence: the making of figures and ornaments in what is termed ‘biscuit ware,’ was for some time peculiar to this town, and we believe is so still. The spars of the county, especially the fluor spar or ‘blue John,’ are wrought into vases and other ornaments, and the black marble of Ashford into vases, columns, chimney-pieces, &c. These spar and marble-works were for some time carried on in the building erected by Crotchet in the year 1702 for a silk throwing-mill; the turning-lathes were set in motion by a water-wheel.

The population of Derby amounted in 1831 to 23,627, of whom 11,269 were males and 12,358 females. Of 5780 males upwards of 20 years of age, 140 were engaged in agricultural pursuits, 953 in manufactures or making machinery, 2714 in retail trade or handicrafts, 1172 in miscellaneous labour, and 85 were servants. The number of capitalists, bankers, and professional or other educated men was 427, and the occupation of 289 was not stated. The population had increased very much in forty years—in 1792 it was 8563; in 1801, 10,832; in 1811, 13,043, and in 1821, 17,423. As, since 1831 many new buildings have been erected, and the place is said (*Report of Commiss. on Municip. Corporations*) to be flourishing, we shall not be far wrong in estimating the present population at 28,000.

Derby returns two members to parliament. It returned burgesses to parliament, 26 Edward I., and has continued to do so ever since. The number of parliamentary electors registered in 1832 was 1384, viz.: 372 freemen and 1012 ten-pound occupiers. Derby is also the chief place of election, and one of the polling stations for the southern division of Derbyshire. The assizes for the county are held here, also the Epiphany, Easter, and Michaelmas sessions; the Midsummer sessions are held at Chesterfield. The borough sessions of the peace are held quarterly before the Recorder; a petty sessions is held daily. There are Courts of Record and of Requests for the borough. The principal market is on Friday. A cattle-market is held once a fortnight on Tuesday. There are nine fairs in the year for cattle, cheese, pedlery, &c., which are, for the most part, well attended. The river Derwent was, several years since, made navigable from the town of Derby to its junction with the Trent, but, since the opening of the Derby canal, the navigation has been disused. This canal branches from the Trent and Mersey (or Grand Trunk) canal at Swarkestone, a few miles south of Derby, runs northward, and intersects the

Derwent at Derby, a towing-bridge being thrown across that river. From Derby the course of the canal is eastward until it joins the Erewash canal at Sandiacre. Over the Markeaton brook, which runs through Derby, the canal is carried in a cast-iron trough or aqueduct. From Derby a short branch of this canal extends to Little Eaton, three or four miles north of Derby, with two arms to the quarries on Little Eaton common. The Derby canal is 44 feet wide at top and 24 feet wide at bottom, and 5 feet deep. Derby is supplied by this canal with coals, building-stone, gypsum, and other things.

There were formerly four religious houses at or close to Derby; an abbey (St. Helen's) of Augustin canons, a nunnery of Benedictines, and houses of Dominicans and Cluniacs. St. Helen's Abbey was founded by Robert de Ferrariis, or de Ferrers, second Earl Ferrers. This abbey appears to have been first established in Derby town, and afterwards removed to a site about a mile north of Derby, where has subsequently risen the village of Darley or Darley Abbey. Its yearly revenue at the suppression was 285*l.* 9*s.* 6*d.* gross, or 258*l.* 13*s.* 5*d.* clear. The Benedictine nunnery, founded by one of the abbots of St. Helen's, had, at the dissolution, a yearly revenue of 21*l.* 18*s.* 8*d.* gross, or 18*l.* 6*s.* 2*d.* clear. There was one hospital, or perhaps two, for leprous persons.

There are several alms-houses at Derby: those founded by the countess of Shrewsbury, in 1599, for eight men and four women; those founded by Robert Wilmot, in 1638, for six poor men and four women, now for four poor men and four women; Large's Hospital, founded by Edward Large, in 1709, for five clergymen's widows, and enriched by subsequent donations. The countess of Shrewsbury's almshouses were rebuilt by the late duke of Devonshire, about 1777, in a style of architecture which has been considered too ornate for a charitable foundation of so humble a character. Thirteen neat and substantial almshouses have been lately erected from the funds of a charity bequeathed 300 years ago by Mr. Robert Liversage to the parish of St. Peter. There is a county infirmary equal to the accommodation of eighty patients besides those who have infectious disorders. The building is plain and neat in its architectural character, built of hard whitish stone. The internal arrangements, which are exceedingly convenient, were chiefly planned by the late William Strutt, Esq. There are also in the town 'a self-supporting charitable and parochial dispensary,' a ladies' charity for the assistance of poor women during their confinement, and many friendly societies, or benefit clubs.

There were in Derby, in 1833, one boarding-school containing 20 girls, and twenty-five day-schools, of all kinds, in which instruction was given to nearly 800 boys, 300 girls, and between 200 and 300 children whose sex is not discriminated in the returns. The grammar-school, one of the twenty-five mentioned above, is supposed to be one of the most antient endowments of the kind in England. It was formerly very flourishing, and enjoyed a high reputation, but at the time of the return had only one or two scholars. At present (1837) we are informed that it is again getting into repute. Two of the day-schools are on the 'national' system, and one on the Lancasterian system, and three are infant-schools. The number of Sunday-schools was twenty-four, and in these were instructed 3198 children, viz.: 1152 boys, 1326 girls, and 720 whose sex is not mentioned. In some of the Sunday-schools the children are taught writing and arithmetic on an evening in the week; to some schools lending-libraries are attached.

Of institutions for literary and scientific purposes there are—The Philosophical Society (originally held at the house of Dr. Darwin), with a good library, a collection of fossils, and mathematical and philosophical apparatus; the Permanent Library, which has lately been much enlarged, and has a public news-room and museum attached to it; and the Mechanics' Institution, the members of which have lately erected a handsome and spacious room for their meetings. Two weekly newspapers are published at Derby.

(Hutton's *History of Derby; Glover's History of Derbyshire; Report of Commissioners of Municipal Corporations and other Parliamentary Papers; Communication from Derby.*)

DERBYSHIRE, a midland county of England, bounded on the north-east by Yorkshire, from which it is partly separated by the rivers Derwent, Rother, and Sheaf; on the north-west by Cheshire, from which it is in this quarter separated by the river Etherow; on the west by Cheshire, from which it is here separated by the river Goyt, and Staffordshire, which latter county bounds it also on the south-west (the Dove separates Staffordshire from Derbyshire on the west, and the Dove and the Trent on the south-west); on the south-east by Leicestershire, from which it is partly separated by the Trent; and on the east by Nottinghamshire, from which it is separated by the Erewash. Its form is irregular; the greatest length is from north (from the point where the three counties of Derby, Chester, and York meet) to south (near Lullington on the Mease, a feeder of the Trent) 56 miles; the greatest breadth is from east (Holm Car Farm near Worksop, Notts) to west (near Chapel-en-le-Frith) 34 miles. The area of the county is estimated at 1010 square miles by Arrowsmith, 1028 square miles according to the statement subjoined to the *Abstract of the Answers and Returns* made in 1831 under the Population Act, or 1036 by taking the area of the different parishes. The population in 1831 was 237,170, or about 235,231, or 229 to a square mile, according to the computation of the area which we adopt. Derby, the county town, is on the Derwent, a feeder of the Trent, 114 or 115 miles N.N.W. of London in a straight line, or 126 miles by the road through St. Albans, &c. [DERBY.]

The county is comprehended between 52° 41′ and 53° 30′ N. lat. and 1° 10′ and 2° 4′ W. long.; the county town is in 52° 55′ N. lat. and 1° 29′ W. long. Besides the main part of the county bounded and situated as above, there is a small detached portion near the southern extremity, inclosed between the counties of Warwick, Leicester, and Stafford. It contains the villages and parishes of Measham, Stretton-in-the-Fields, and Wilsley, and the village and chapelry of Chilcote.*

Surface, Hydrography, and Communications.—The southern and south-eastern parts may be considered as on the whole flat, yet they have an easy ascent towards the north-western portion, which comprehends one of the most elevated and rugged districts in England. This part (which is commonly known by the name of the Peak) is occupied by a part of that range of high lands, which some geographers have designated the Penine chain, which separates the waters which flow into the sea on the eastern side of the island from those on the west side. This chain of mountains enters the county at or near its northern extremity, and the principal ridge runs in an irregular line S.S.W. till it enters Staffordshire a few miles S.W. of Buxton. Along this ridge are the following heights: Dean Head Stones, 539 feet high; Blakelow Stones, which Farey considers to be the highest point of the ridge and of the county generally; Kinderscout, which Farey considers to be inferior in height only to Blakelow Stones, and which is stated, we presume, in round numbers, to be 1800 feet high (*Phys. and Pol. Geog. of the Brit. Isles*, in *Lib. of Usef. Kn.*); and the northern and middle peaks of Axe Edge Hill, the southern peak being in Staffordshire. The northern or great summit of Axe Edge Hill has been stated to be 1875 feet above the level of the sea (Farey), but later observations have reduced it to 1751 feet; Lord's Seat, to the east of the principal ridge of the Penine chain, is 1751 feet high. This ridge divides the basin of the Mersey from that of the Trent, one of that large system of rivers which has the Humber for its æstuary. From this, the principal ridge of the chain, lateral ridges proceed, which bound the subordinate basins of the various affluents of the greater rivers mentioned already. One of these lateral ridges, branching from the principal ridge near Axe Edge Hill and running south-east, separates the basin of the Derwent from that of the Dove. The length of this ridge, following its windings, is estimated at 46 miles; but the length of a direct line between its extremities is not estimated at more than 35½ miles. The ridge, which forms the eastern boundary of the basin of the Derwent, and which extends in a winding course about 67 miles, does not wholly belong to Derbyshire. It branches off from the Penine chain, in Yorkshire, and approaching the border of that county towards Derbyshire, runs along the boundary, then enters Derbyshire, and proceeds in a south-eastern direction across the east moors of the county into Nottinghamshire.

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* We give the above dimensions and the latitude and longitude of the extreme points from Arrowsmith's map. The length and breadth, as given in Farey's *Agricultural Survey* (where the detached portion of the county is included), are nearly the same as we have given; but the county is said to be comprehended between 52° 38′ and 53° 27′ N. lat., and between 1° 13′ and 2° 3′ W. long.

The first part of this ridge separates the waters of the Derwent from those of the Don, the part nearest to Nottinghamshire from those of the Rother, a feeder of the Don. In this ridge is the hill called Ox Stones, 1377 feet high, between Sheffield (Yorkshire) and Hathersage. Alport or Orpit hill, south-east of Wirksworth, is 980 feet high. It is said that from this eminence the Wrekin hill, near Shrewsbury, which is 50 miles distant, may be seen.

The Derbyshire highlands are intersected by narrow valleys or dales abounding with the most striking and picturesque scenery. We subjoin the following observations from Rhodes's *Peak Scenery* (8vo. edit., Lond., 1824). ‘A more marked and obvious contrast in form and feature is scarcely to be met with in any part of the kingdom than the county of Derby presents. The more southern districts, though richly cultivated, are generally flat and monotonous in outline; to the picturesque traveller they are therefore comparatively of but little value: approaching its northern boundary it wears a more dignified aspect; here the hills, gradually assuming a wilder, a bolder, and a more majestic appearance, swell into mountains which, extending to the most elevated parts of the Peak, mingle their summits with the thin white clouds that often float around them.

‘That part of Derbyshire, known by the name of the High Peak, is everywhere composed of a succession of hills, of a greater or lesser elevation, and intervening dales which play into each other in various directions. Throughout the whole the same general character prevails. A thin mossy verdure, often intermingled with grey barren rock, adorns their sides; and sometimes the interference of what Mr. Farey has denominated “indestructible limestone rubble” disfigures their steep acclivities. Yet even then a little brushwood occasionally breaks in to enliven and diversify the otherwise sterile scene. These remarks particularly apply to the minor dales of Derbyshire. Those which form the channels of the principal rivers are of a more elevated description, and possess, in an eminent degree, that variety of object, form, and colour, which is essential to picturesque beauty, sometimes united with a magnitude of parts where grandeur and sublimity preside in solitary stillness.

‘Travellers, accustomed to well-wooded and highly cultivated scenes only, have frequently expressed a feeling bordering on disgust at the bleak and barren appearance of the mountains in the Peak of Derbyshire; but to the man whose taste is unsophisticated by a fondness for artificial adornments, they possess superior interest and impart more pleasing sensations. Remotely seen they are often beautiful. Many of their forms, even when near, are decidedly good; and in distance the features of rudeness, by which they are occasionally marked, are softened down into general and harmonious masses. The graceful and long-continued outline which they present, the breadth of light and shadow that spreads over their extended surfaces, and the delightful colouring with which they are sometimes invested, never fail to attract the attention of the picturesque traveller.’ . . . ‘Such are the appearances that often occur amongst the mountains of Derbyshire. Descending into the dales, especially those through which the Derwent, the Dove, and the Wye meander, the eye is enchanted with brilliant streams, well-cultivated meadows, luxuriant foliage, steep heathy hills, and craggy rocks, which administer to the delight of the traveller, and alternately soothe or elevate his mind as he moves along.’

The broadest and the deepest valleys are in the higher parts of the Peak. The picturesque beauty of the valleys is increased by the frequently precipitous character of the hills or rocks which bound them. The faces of these rocks rise up almost perpendicularly from the sides of the valleys, as may be observed near Castleton in the centre of the Peak, and near Stoney Middleton in the valley of the Derwent, where the Castle Rock rises to a vast height, and obtains its name from the singular and turret-like form which its craggy projections and points assume. Matlock High Tor, and other rocks in Matlock Dale, and the rocks which skirt some parts of the valley of the Dove, are of this precipitous character. In the smaller and narrower dales the projections of one side have corresponding recesses on the other.

The rivers of Derbyshire rise, for the most part, in the north-western and more elevated part of the county, and have a course toward the south or south-east. This is the case with the Derwent and its principal affluent the Wye, with the Dove, which is the boundary river of Staffordshire and Derbyshire, and those of its tributaries which belong to the latter county. In the eastern part of the county about Chesterfield, which is separated from the other parts by the ridge of high land which bounds on the east side the valley of the Derwent, the direction of the stream that drains it (the Rother) is north-east. In the extreme north-west there are a few streams that flow westward into the Etherow or Goyt and so into the Mersey.

The Derwent rises in a place called ‘the Trough,’ on the border of Yorkshire and Derbyshire, where the principal ridge of the Penine chain enters the latter county, and has a S.S.E. course. Four or five miles from its source it receives a stream (the Westend river) of about the same length as itself, and about nine or ten miles from its source it is joined by the Ashop river, into which the Alport brook flows; and three miles lower down it receives the Noe or Now, from Hope Dale: all these tributaries join it on the west or right bank. From the junction of the Now the Derwent flows on through Chatsworth Park, twelve or thirteen miles, until it meets the Wye at Great Rowsley, not receiving in the way any accessions worth notice, except the brooks Burbadge and Barbrook, which fall into it on the left bank. The Wye rises near the Axe Edge Hill in the principal ridge of the Penine chain, and flows to the south-east through Miller's Dale and Monsal Dale and past the town of Bakewell into the Derwent: its whole course is more than twenty miles. From the junction of the Wye the Derwent flows on in the same direction (S.S.E.) as hitherto to Derby, and receives in its way the River Amber, about fourteen miles long, which joins it on the left bank above Belper, and the Ecclesburn from Wirksworth, about ten miles long, which joins it on the right bank. From the junction of the Wye to Derby is about twenty-five miles. Below Derby the river runs south-east with a sinuous course of about twelve miles into the Trent: this part of the river was made navigable some years since, but the navigation of it has been superseded by the cutting of the Derby canal. Its whole course is about sixty to sixty-five miles. ‘In the space of forty miles, which includes the whole course of this river from the highest and wildest parts of the Peak to the town of Derby, scenery more richly diversified with beauty can hardly anywhere be found. Generally its banks are luxuriantly wooded: the oak, the elm, the alder, and the ash, flourish abundantly along its course; beneath the shade of whose united branches the Derwent is sometimes secluded from the eye of the traveller and becomes a companion for the ear alone; then, suddenly emerging into day, it spreads through a more open valley, or winding round some huge mountain or rocky precipice reflects their dark sides as it glides beneath. Sometimes this ever-varying and ever-pleasing stream precipitates its foaming waters over the rugged projections and rocky fragments that interrupt its way: again the ruffled waves subside and the current steals smoothly and gently through the vale, clear and almost imperceptible in motion.’ (Rhodes's *Peak Scenery*.) The course of the Wye is generally through narrow dells with precipitous sides: it receives a small tributary, the Lathkill, just before it falls into the Derwent. The current of the Derwent is rapid, and its waters are said to be of a higher temperature than ordinary; in the summer season it is said the thermometer will stand in them at 66° Fahrenheit, and in severe weather it has been observed that the Derwent has not been frozen so early as the Trent, and has become open nearly a month earlier. (Pilkington's *Derbyshire*.)

The Dove rises on the border of Staffordshire and Derbyshire, in the slope of the Axe Edge hill, and is, throughout its course, the boundary between the counties. Its course is S.S.E., with little variation for about twenty miles, to Hanging Bridge by Ashbourne, just above and below which bridge it receives its first two Derbyshire tributaries of any consequence, viz., a stream which comes from the village of Parwick, about nine miles long, and the Schoo, which rises near Wirksworth, and flows by Ashbourne into the Dove, after a course of about ten miles. The Dove, in the upper part of its course, ‘is one of the most beautiful streams that ever gave a charm to landscape: and while passing through the first and least picturesque division of the Dale (Dove Dale), the ear is soothed by its murmurings, and the eye delighted with the brilliancy of its waters—in some places it flows smoothly and solemnly along, but never slowly, in others its motion is rapid, impetuous, and even turbulent. The ash, the hazel, the slender osier, and the graceful birch, hung with honeysuckles and wild roses, dip their pensile branches in the stream and break its surface into beauteous ripples. Huge fragments of stone, toppled from the rocks above, and partly covered with moss and plants that haunt and love the water, divide the stream into many currents; round these it bubbles in limpid rills that circle into innumerable eddies, which by their activity give life and motion to a numerous variety of aquatic plants and flowers that grow in the bed of the river: these wave their slender stems under the surface of the water, which, flowing over them like the transparent varnish of a picture, brings forth the most vivid colouring. Occasionally large stones are thrown across the stream, and interrupt its progress: over and amongst these it rushes rapidly into the pool below, forming in its frequent falls a series of fairy cascades, about which it foams and sparkles with a beauty and brilliancy peculiar to this lively and romantic river.' (Rhodes's *Peak Scenery*.) Below its junction with the Schoo, the Dove flows south-west for about three or four miles; then south for about seven more, receiving by the way the Churnet, its largest Staffordshire tributary; it then flows in a winding course E.S.E. for twelve or fourteen miles and falls into the Trent, just below Burton, receiving several streams, the longest of which rises near Atlow, between Ashbourn and Belper, and has a course of above fifteen miles. The whole course of the Dove may be estimated at from forty to forty-five miles. The waters of this river have a clear blue tint, deepening through various shades to a dark purple. It frequently overflows its banks in the spring; and the fertilizing effect of these floods has given rise to the distich—

'In April, Dove's flood
Is worth a king's good.'

Sometimes, however, the waters rise with such rapidity and violence as to be very destructive.

The Erewash rises in Nottinghamshire, near the village of Kirkby, and flowing W.S.W. for about three miles reaches the border of Derbyshire, and then flows, first S.W. and then S. by E., along the boundary of the two counties into the Trent. Its whole course is about twenty miles.

The Mease rises in Leicestershire, near Ashby de la Zouch, and flows first S.S.W., then W., and then N.N.W., into the Trent. Its course, which is about eighteen or twenty miles, is, for a short distance, in the detached portion of Derbyshire, partly on the border of the county, and partly beyond the border, in the counties of Leicester and Stafford.

These four rivers fall into the Trent, which crosses Derbyshire in a direction nearly north-east. It touches the border five or six miles north-east of Lichfield, just at the point where the Mease falls into it, and flows about ten miles N.N.W. along the border of Derbyshire and Staffordshire, past Burton upon Trent, in Staffordshire, until its junction with the Dove, after which it quits the border, runs nearly due east through Derbyshire for about eleven miles to the border of Leicestershire. It then turns E.N.E. and runs for about ten miles along the border separating Derbyshire from Leicestershire and Nottinghamshire, till its junction with the Erewash, after which it quits Derbyshire altogether. The Derwent falls into it about five miles above the junction of the Erewash. About thirty-one miles of the course of the Trent are thus upon or within the Derbyshire border. It is calculated (Farey, *Agricultural Survey of Derbyshire*) that it receives the drainage of ten-thirteenths of the county, exclusive of the streams in the eastern part which flow into the Idle, one of the tributaries which joins the Trent in the lower part of its course. The Trent is navigable from Burton-upon-Trent, but in 1805 the navigation was given up by agreement with the proprietors of the Trent and Mersey canal, which runs by its side, and the navigation of the river now commences just at the junction of the Derwent.

The Goyt rises near Axe Edge, and flows N.N.W. along the border of Derbyshire and Cheshire, about fourteen miles, till its junction with the Etherow, which has a south-west course of about fifteen or sixteen miles chiefly on the border of the same two counties. The springs of the Etherow are in Yorkshire and Cheshire. The united stream of these two rivers flows into the Mersey at Stockport. They receive many small streams from the adjacent part (the High Peak) of Derbyshire.

The Rother rises in the East Moor, a mile or two east of Chatsworth Park, and flows eastward about eight miles to Chesterfield, where it turns to the north-east and flows into Yorkshire. About twenty-two or three miles of its course belong to Derbyshire. It joins the Don at Rotherham in Yorkshire. The Dawley (ten miles long) is its only Derbyshire tributary that requires notice. This rises on the Nottinghamshire border and flows north past Bolsover.

The Sheaf, which joins the Don at Sheffield, the Wallin, the Poulter, and the Ryton, whose waters flow directly or ultimately into the Idle, rise in Derbyshire.

Derbyshire has several navigable canals and railroads. The canals are, 1, Grand Trunk, or the Trent and Mersey canal; 2, the Erewash canal; 3, the Derby canal; 4, the Cromford canal; 5, the Nutbrook canal; and 6, the Chesterfield canal. The Peak Forest and the Ashby-de-la-Zouch canals have a small portion of their extent just within the county, but rather belong, the former to Cheshire and the latter to Leicestershire. We shall not therefore notice them here.

1. The Trent and Mersey canal belongs to Derbyshire from its commencement in the river Trent, at Wilden Ferry (at the junction of the Derwent), to Monk's Bridge, where the canal is carried for a mile and a quarter over the flat meadows of the Dove valley on an embankment thirteen feet high, with aqueduct bridges over the Dove and one or two other streams, containing twenty-three arches of from twelve to fifteen feet span: twelve of these arches are over the main branch of the Dove. This canal was begun in 1766, and its whole extent is ninety-three miles. It extends through Derbyshire, Staffordshire, and Cheshire. Until the year 1785, men were employed in large gangs to draw the boats; now horses are universally used.

2. The Erewash canal commences in the Trent, midway between the junction of the Derwent and that of the Erewash river, and runs northward along the valley of the Erewash, first on the west and then on the east side of that river, and terminates in the Cromford canal at Langley Bridge: that part of its course which is on the east side of the Erewash belongs to Nottinghamshire. Its whole length is nearly eleven miles. It has aqueduct arches over the Nut brook and the Erewash river. It serves for the importation of corn, malt, and timber, and for the export of coal, limestone, iron, lead, and marble and other stone.

3. The Derby canal is described under the town of Derby. [DERBY.]

4. The Cromford canal commences in the Erewash canal at Langley Bridge, and runs northward to the Codnor Park Iron Works, following the valley of the Erewash, and having the first part of its course on the east side of that river in Nottinghamshire, and the latter part on the west side in Derbyshire. From Codnor it sends off a branch, two miles and a half or three miles long, along the valley of the Erewash, on the west or Derbyshire side of that river, to the village of Pinxton, while the main line of the canal turns westward to the valley of the Derwent, crossing the river Amber in its way; it then turns to the north-west, and follows the valley of the Derwent, first on the east and then on the west side of that river, to Cromford Bridge, where it terminates: the length of the canal is fifteen miles nearly. Between the valley of the Erewash and that of the Derwent this canal is carried through the higher ground by a tunnel more than a mile and a half long. The width of the canal in the tunnel is nine feet at the surface of the water; the crown of the arch is eight feet above the water. The tunnel is lined with brick, except where the perforated rock appeared capable of supporting itself. There are three aqueduct bridges on the line of this canal. One is over the Erewash; one, Bull Bridge aqueduct, which is over the Amber, is six hundred feet long and fifty feet high: the third aqueduct is over the Derwent, at Wigwell, and is six hundred feet long and thirty feet high; the span of the river arch is eighty feet. This canal is chiefly used for the conveyance of coals and coke; but lime and limestone, gritstone, ironstone, iron, lead, slate, timber, corn, &c., are carried on it. Besides the Pinxton cut already noticed, there is another small cut near the Derwent aqueduct, and there are several short railways which enable the coal-works, &c., on its line to communicate with the canal. A railway from Mansfield communicates with the Pinxton branch, and the Cromford and High Peak railway communicates with the main line of the canal near its termination at Cromford Bridge.

5. The Nutbrook canal commences at the collieries at Shipley, on the right of the road from Derby to Mansfield, and runs S.S.E. four miles and a half into the Erewash canal. Several railroads lead from the neighbouring col

lieries to the Nutbrook canal, the conveyance of coal being its chief object.

6. The Chesterfield canal commences in the tideway of the Trent, below Gainsborough, and has the greater part of its course in Nottinghamshire, and a small part in Yorkshire. It enters Derbyshire from the latter county near the village of Kilmarsh, in the valley of the Rother, and runs S. S. W. along that valley to Chesterfield. Its whole length is forty-six miles, of which about twelve are in Derbyshire. In the Derbyshire part of the canal are two aqueduct bridges, one over a brook at Renishaw furnace, and one over the Doolee or Dawley, a branch of the Rother, near Stavely: many railways communicate with it, and are intended to convey coal and iron from the collieries and iron works thereabout. This canal was opened A. D. 1777: its object is the exportation of coal, lime, lead, and iron; and the importation of corn, timber, &c.

The principal railroad is the Cromford and High Peak railroad. The others are of less importance; they are chiefly private property, and are designed to convey the produce of mines, collieries, and iron works to the various canals.

The Cromford and High Peak railroad commences at the Cromford canal, near its termination at Cromford, and runs in an irregular line north-west to the Peak Forest canal, which it joins at Whaley Bridge, three or four miles west of Chapel-en-le Frith. It passes near Wirksworth and Buxton. Its length is thirty-four miles nearly, and it has six inclined planes. The Act of Parliament for it was obtained in 1825: we are not aware whether the railroad is yet completed.

The great road from London to Manchester, Carlisle, and Glasgow, passes through this county. It enters Derbyshire at Cavendish Bridge, over the Trent, just above its junction with the Derwent, runs north-west through Derby and Ashbourne, and quits the county at Hanging Bridge, over the Dove. Two other roads to Manchester branch off from that just described; one at Ashbourne, which runs N. N. W. through Buxton, and quits the county at Whaley Bridge; another at Derby, which runs through Matlock, Bakewell, and Chapel-en-le-Frith. The road which connects Bristol and Birmingham with Sheffield and Leeds enters Derbyshire at Monk's Bridge, over the Dove, and runs northward by Derby, Chesterfield, and Dronfield, into Yorkshire. The road from London to Sheffield and Leeds enters the eastern side of the county from Nottinghamshire, and runs to Chesterfield, where it unites with the road just mentioned. A road from Sheffield to Manchester crosses the Peak through Hathersage, Castleton, and Chapel-en-le-Frith. The other roads are too numerous for us to notice.

Geology and Mineralogy.—That part of Derbyshire which lies south of a line drawn through Ashbourne, Duffield, and Sandiacre, is almost entirely occupied by the red marl or new red sandstone, a formation which overspreads so large a portion of the midland counties. There are indeed a few spots in which the magnesian limestone, which ordinarily underlies it, rises to the surface; and just on the Leicestershire border, near Ashby-de-la-Zouch, the coal-measures emerge from beneath it, and form one or two small detached coal-fields. In many parts, and especially along the valleys of the lower Derwent and the Trent, the red marl is covered by beds of gravel, and upon the gravel alluvial flats of loam or sandy loam, of from one to several feet in thickness, and without stones, are occasionally found. The strata of the red marl present considerable variety: among them are some micaceous gritstone beds, producing a good freestone; other strata are not concreted, but appear as sand, red, white, and yellow; others are more clayey, and from them bricks and tiles are made. The strata of the red marl formation are generally horizontal or nearly so. Several deposits of gypsum are found in this formation, and are quarried in several places, as at Darley Abbey [DERBY], in the tongue of land formed by the Derwent and the Trent, and in the southern extremity of the country. That gypsum, which is quite white, or only faintly streaked with red, is used by the potters of Staffordshire (as Plaster of Paris) for their moulds; some fine blocks are selected for the turners of alabaster ornaments, and the inferior sort is used by plasterers for ordinary purposes or for making the plaster floors often seen in this county. Some of the best land in or near Derbyshire lies on the red marl; in general however it is inclined to be too tenacious and cold. This formation also occupies a very small portion of the county at its eastern extremity.

The newer magnesian or conglomerate limestone, which crops out from under the red marl of Nottinghamshire and skirts it on its western border, extends into the eastern part of Derbyshire, where it occupies the part east of a line drawn north and south through Bolsover. The thickness of this formation is probably 300 feet. The general colour is yellow, of various shades, from a bright gamboge to a light straw colour or white. Many of the beds have a granular texture, and cannot be calcined; they have generally passed with the inhabitants for gritstone rather than limestone. This limestone is quarried for building, also for flooring and staircases. Towards the bottom of the series are several beds of compact blue limestone, imbedded in blue clay, and abounding with shells. This blue limestone yields excellent lime: it is quarried at Bolsover, where also pipe clay is obtained: the pipe clay separates the limestone beds. The strata of the magnesian limestone form a better subsoil for arable than for grass land.

The coal-measures underlie the magnesian limestone and crop out from beneath it on the west. These coal-measures form part of that important coal-field which occupies a considerable part of the west riding of Yorkshire, and extends into Nottinghamshire and Derbyshire, being bounded on the east by the magnesian limestone, and on the south by the red marl. The strata range from north to south, and dip to the east. The Derbyshire portion of this coal-field is east of a line drawn from between Hathersage and Sheffield to Little Eaton, near Derby. There are twenty gritstone-beds, some of them of great thickness, and numerous strata of slate-clay, as shale, bind, and clunch: some of the shale-beds contain rounded or ovate masses, and even thin strata of argillaceous ironstone, with impressions of mussel shells, and coaly impressions of vegetables. A hard argillaceous rock called crowstone forms in some places the floor of the coal-beds. The number or order of the coal-seams is probably about thirty, varying in thickness from six inches to eleven feet: their aggregate thickness is about eighty feet: these dimensions can only be considered as approximate. Every variety of coal seems to be found in this field, hard stone coal, cannel, peacock, and caking coal. The coal-pits in Derbyshire are dispersed over the coal-field, and are very numerous, especially about Chesterfield and Alfreton, and in the district south and west of the Cromford and Erewash canals. There are coal-pits also in the small detached coal-fields on the Leicestershire border, noticed in speaking of the red marl, and coal is obtained between Ashbourne and Derby apparently by working through the red marl to the coal-measures which lie underneath them. The beds which lie between the seams of coal are worked for various purposes. The workings of the ironstone are generally begun at the surface, and pursued until they become dangerous from the loose nature of the stratum in which they lie: that ironstone which is marked with impressions of mussel shells (called the mussel band) is worked as an ornamental marble. From the gritstone-beds are quarried grindstones for cutlers: the binds, where they are hard and black, are used as black chalk; others, when decomposed, make good brick earth: the clunch is sometimes of that kind which is used for fire-bricks; where it crops out to the surface it becomes soft clay. Potters' clay, of various colours and qualities, occurs in this coal-field.

Millstone-grit and shale form a series of strata, having an aggregate thickness of about 870 feet; the millstone-grit, 360 feet thick, forming the upper part, and the shale and its associated rocks, 510 feet, the lower part of the formation. The millstone-grit ranges on three sides (viz., the east, north, and west,) of the carboniferous limestone, which we shall have presently to notice as occupying the central part of the county north of Ashbourne and Duffield: it occupies a tract between Duffield, Belper, and Wirksworth, on the west side of the Derwent, and forms the heights that bound the valley of that river on the east side up to its source. It occupies also the northern and western borders of the High Peak, and extends southward to Buxton, near which it passes into Staffordshire. The hills formed by it usually present a bold escarpment, crowned by rude piles of crags, exhibiting some of the wildest rock scenery of the district. The shale occupies a lower district between this and the carboniferous limestone, but in this lower tract are occasional insulated mountains, crowned with a cap of millstone-grit. Kinderscout is one of these. The shale contains some alternating beds of fine-grained siliceous grit and nodules of ironstone; and it has some subjacent and apparently local beds of shale limestone, which afford a beautiful black marble.

Carboniferous or mountain limestone occupies the tract bounded on the south by the red marl, and on all other sides by the millstone-grit and shale just described. This limestone district is entirely comprehended in Derbyshire, except on the north-east, where it just passes over the Yorkshire boundary, and on the south-west, where it enters Staffordshire. There are one or two places in the southern part of the county where the limestone crops out. On the eastern side of the county the strata dip under the shale; but on the western side, by a great fault, the lowest bed of the limestone is elevated and brought into contact on the same level with the shale. The limestone is divided into four beds by three intervening beds of toadstone. The respective thickness of these limestone-beds (reckoning from the uppermost) is as follows:—first bed, 150 feet; second bed, 150 feet; third bed, 210 feet; fourth bed, at least 250 feet; aggregate at least 760, but in fact the thickness of the lower bed is not ascertained: it is only known that it extends 250 feet. In each bed of this limestone thin beds of clay are found, with imbedded masses of toadstone, and various organic remains. The lowest bed, which is the most esteemed by the lime-burners, has very few dark coloured strata; but in the three upper beds these are more common, and the second bed contains some very fine black strata, which are quarried as black marble. The upper bed is also quarried as marble, and contains white chert or china-stone, which is extensively used in the Staffordshire potteries. The beautiful fluor spar called 'Blue John,' from which vases and other ornaments are made, is found in a mountain of limestone.

The outcrop of the carboniferous limestone forms the lead district of Derbyshire. Numerous veins have been worked in it, chiefly for lead; but ores of zinc, iron, manganese, and copper, also occur. Lead ore is found occasionally in the toadstone which intervenes between the limestone-beds, but commonly the veins are cut off by the toadstone-beds. The veins which contain lead have generally a direction east and west; some of them approach the perpendicular (rake veins); others are nearly horizontal (pipe veins), and are rather beds of spar and ore, lying between the strata of limestone, and in most cases connected with the surface by a rake vein.

The limestone strata of Derbyshire are subject to very remarkable derangements or faults. They are characterized also by numerous caverns, and by the frequent engulphment of the streams by subterraneous courses termed swallow holes. The caverns appear to have been excavated wholly or chiefly by the agency of water.

The three toadstone-beds have an average thickness of 60 feet for the upper, and 75 feet for each of the lower, giving an aggregate of 210 feet; in parts however the thickness of the three amounts to above 250 feet. There are several varieties of the toadstone, which sometimes passes into ordinary basalt: among the substances inclosed are the quartz crystals locally termed Derbyshire diamonds.

Of the limestone caverns, the most remarkable is that now generally known as Peak's Hole, or the Devil's Cave, near Castleton. It is situated at the extremity of a deep and narrow rocky chasm in the valley in which Castleton stands, where craggy projections hide it from the traveller until he approaches pretty near. The entrance is a tolerably regular arch of about 40 feet high and above 100 wide, extending in length nearly 300 feet. This part is inhabited by poor people engaged in making twine and pack-thread, who have built their habitations and carry on their work under this natural shelter. At the end of this vestibule, as it may be termed, the arch contracts, and the visiter is obliged to stoop until he emerges into a spacious vault, called 'the bell house.' A second contraction, where the rock closes almost down upon the surface of a stream of water which occupies the passage, conducts to a third cavern, said to be 200 feet wide, and in some parts 120 feet high: this is succeeded by a series of cavernous chambers, at the extremity of the farthest of which the rocks close down upon the stream of water in such a way as to preclude all access to the caverns which are supposed to lie beyond. The water which thus obstructs farther progress is a stream engulphed at a spot called Perry-foot, three miles from Castleton, on the Manchester road; it reappears at the innermost recess of the cavern, through the successive chambers of which it flows, and emerges into daylight at the entrance. After heavy rains this stream is so much swelled as to render it impossible to reach the farther part of the cavern. The whole length of Peak's Hole is variously estimated. Pilkington estimated it at 2250 feet, beside an additional chamber nearly 500 feet long. Elden Hole is a perpendicular chasm in a limestone rock near Castleton, more than 180 feet deep, with a sloping passage to an interior cavern or series of caverns. It is supposed that a second chasm of unknown depth descends from the bottom of this cavern. Another series of grottoes (Bagshaw Grottoes), extending about 2000 feet, adorned with stalactites, was first explored about the commencement of the present century. [For Pool's Hole, see BUXTON.] There are several other caverns in the Peak.

The mineral springs of Derbyshire are numerous and important. The most celebrated warm springs are those at Buxton [BUXTON] and Matlock. There are warm springs at Stoney Middleton, where it is supposed that the Romans established a bath. The temperature of the Middleton waters is 2° higher than that of the warmest springs at Matlock. The most celebrated of the sulphureous waters is at Kedleston Park, three miles north-west of Derby. They are valued for their antiscorbutic qualities. There are several chalybeate springs. For the ebbing and flowing well on the road from Buxton to Castleton, see BUXTON.

Agriculture.—On the high hills and moors of Derbyshire the cultivation is not extended as it might be; and there are great tracts of rough pasture of no great value in their present state, which, with a moderate outlay, might be improved or converted into arable land, as has been done in similar situations in Scotland. In the valleys, or on the less abrupt hills, a very fertile red marly loam is frequently met with, which is productive of every kind of grain without any extraordinary tillage. Of this kind are the lands about Barton, Blount, and Ash, and in several places in the southern and eastern part of the county. The soil on the surface naturally partakes of the nature of the rocks which are found immediately below it.; and where any particular stratum rises to the surface, or crops out, as it is called, the soil is chiefly made up of the same earthy substances, which have been more or less decomposed by the action of the air and mixed with vegetable matter. An account of the different soils is given in the Agricultural Report of the county, by Farey, of which the following table forms an epitome, distinguishing the strata from which they are formed and the number of acres in extent.

Gravelly soils	77,000 acres.
Red marl soil	81,000
Yellow limestone soil . . .	21,580
Coal measure, upper part . .	30,000
„ lower part . .	60,000
Grit stone and shale soils . . .	160,500
Mineral limestone and toadstone soils	51,500
Fourth limestone soil . . .	40,500
Total surface . .	522,080 acres.

Most of these soils may be ranked among the clays and loams of various degrees of fertility, there being but a very small proportion of sandy soils in Derbyshire. Where these occur, they are mostly alluvial, apparently washed out of the loam and brought together by currents, or the decomposition of the grit and micaceous sandstone in the grit or limestone shale.

The climate of Derbyshire varies according to the situation and height of the land above the level of the sea. The quantity of rain that falls in the mountainous parts is much greater than that in the low country: at Chatsworth, for instance, the annual fall of rain is about 28·411, and at Derby 24·77 inches. In the valleys it differs little from the surrounding counties. The time of harvest is rather late in exposed situations, and is frequently much protracted by abundant rains in the month of October; it is therefore of great importance to sow as early as the season will permit, so as to have the corn ripe in time to gather it in before the autumnal rains.

The manner in which the soil is cultivated varies as much as its nature. Rich proprietors who have experienced bailiffs adopt all the new improvements, and their farms are well managed. There are also a few farmers who have some capital and manage their land well; but the majority are small farmers, who follow the routine of their forefathers, and have not the means, if they had the inclination, to make permanent improvements. A great many farms might be doubled in value by judicious draining, and lands made to produce turnips which now are thought too heavy and wet for this useful root. The pastures also might, in many places, be greatly improved by underdraining, and rendered much better adapted to feed sheep. A common obstacle to improvement is the want of leases; for although tenants are seldom removed if they pay their rents, and it is not unusual for a tenant from year to year, when he dies, to give possession of the farm to his widow or one of his children by a testamentary bequest, which is generally respected by the landlord, the rent may be raised, if the estate comes into other hands, and the money laid out on improvements by the tenant may be the cause of this rise. Tenants from year to year are therefore satisfied with a bare livelihood, and have no motive to improve their farms. Many farms are so small that they are scarcely superior to cottage tenures, and the occupiers have other means of gaining a livelihood besides their land. In the neighbourhood of Derby and other manufacturing towns, as also near the most productive mines, some small portions of land are neatly cultivated, in a great measure by the spade, and are consequently very productive. They are let at higher rents than the quality of the soil would otherwise warrant.

The course of cultivation on the best loams is generally that which begins with a summer fallow manured with lime for wheat, and succeeded by spring corn with or without clover or grass seeds. Some farmers have adopted the improved convertible system, and find the superiority of it in point of profit, uniting the advantages of a dairy with those of an arable farm. Spring wheat has been introduced instead of barley on the best soils, and the land is laid down with grass seeds in the first crop after the fallow, or the turnips, where these are introduced.

The wheat produced on the red land is good and heavy. On the poorer soils oats and barley are more certain and profitable crops. When the wheat has failed during the winter, and looks poor and thin in spring, it used to be a common practice to sow barley amongst it; the mixed produce was called *blend*, and ground to a coarse meal of which bread was made for the labourers. Spring wheat has been found a better substitute, and blend is now seldom met with. Haver cake made of oatmeal is still a common bread of the labourers, although wheaten bread is now very generally preferred.

Potatoes are raised in considerable quantities, both in garden plots, and in the fields, where they are planted in rows and moulded up with the plough. The produce on good loams well manured, especially on land ploughed up from grass, is very great. Six hundred bushels per acre is not thought a very extraordinary crop in very superior soils. They are given to cattle, as well as used for human food.

A large proportion of the lands is in permanent pastures, of which some are very rich. Derbyshire cheese is noted as of a good quality, and the best is often sold for Cheshire or Gloucester when made of the shape and colour of these cheeses. The common Derbyshire cheese is not generally coloured. It resembles some kinds of Dutch cheeses, and keeps well.

There are some very highly productive meadows along the course of the rivers in this county, but an improved system of embankment and irrigation is still wanting in many favourable situations. The meadows along the Dove and other rivers are from their situation very subject to sudden floods, which endanger the safety of the cattle grazing in them. To obviate this mounds of earth have been raised in many places, to which the cattle may fly for refuge; but a judicious embankment would be much more useful, by keeping the waters within proper channels, and would allow the admission of the water by flood-gates, when it is advantageous to the land.

When the upland pastures are mown for hay, they are also called meadows. Some of these are very rich, and will fatten the heaviest oxen; but the generality of the hilly pastures are below the medium quality of pastures in England. They might be much improved by draining and weeding, which is seldom attended to.

There are many woods and coppices scattered through the country. There being no great demand for fire wood in a country abounding with coal, the coppices are allowed to grow for twenty or twenty-five years before they are cut, in order that the poles may acquire a considerable size, and be proper for supporting the roofs and sides of excavations in mines and coal-pits, or fit to make ladders of. A good coppice of twenty-five years' growth may be worth from 25*l.* to 50*l.* per acre to cut for the above purposes, leaving a sufficient number of trees and poles at each cutting to keep up the timber growing, which when felled will be worth as much as the underwood. Many young plantations have been made of late years, and are in a thriving state.

The horned cattle of Derbyshire have no peculiar character. The various improved breeds are met with in the richer pastures, and hardier animals on the mountains. The same may be said of the sheep. The sheep on the hills are similar to those found on the Cheviot Hills; in the valleys the Leicester and South Down breeds, and various crosses are generally preferred by the best farmers: but the quantity fatted is not so great as would be the case were the land better adapted for turnips.

The Derbyshire breed of horses is good, and many are bred in this county which are fitted for the carriage and the saddle, as well as for the farm, and form an important article in the profits of some of the larger farms.

There are numerous fairs in the county, as well as weekly markets: the principal fairs are the following:—Alfreton, July 31; November 22 (for horses and horned cattle). Ashburne, first Tuesday in January; February 13 (for horses and cattle); April 3; May 21; July 5 (do. and wool); August 16 (horses and cattle); October 10 (do.); St. Andrew's eve, or Saturday before (a considerable horse fair). *Ashover, April 25 and October 15 (cattle and sheep). Bakewell, Easter Monday; Whit Monday; August 26; Monday after October 10; and Monday after November 22. Belper, May 12; October 31 (cattle and sheep). Bolsover, Easter Monday. Chapel-en-le-Frith, Thursday before February 13; March 24 and 29; Thursday before Easter; April 30; Holy Thursday and three weeks after (cattle); July 7 (wool); Thursday before August 24 (sheep and cheese); Thursday after September 29; Thursday before November 11 (cattle). Chesterfield, January 25 or Saturday before (cattle); February 28 or Saturday before; first Saturday in April; May 4; July 5 (horses and cattle); September 25 (cheese, onions, &c.); last Saturday in November (cattle, sheep). Crich, Old Lady Day; Old Michaelmas Day. *Cubley, November 30 (fat hogs). *Darley Flash, May 13; October 27 (cattle and sheep). Derby, January 25; March 21 and 22 (cheese); Friday in Easter week (cattle); Friday after May day; Friday in Whitsun week; July 25 (cattle); September 27, 28, 29 (cheese); Friday before Old Michaelmas (cattle); October 18 (cheese). Dronfield, April 25 (cattle and cheese); August 11. *Duffield, March 1 (cattle). Higham, first Wednesday in the year. *Hope, May 12 and September 29 (cattle). *Matlock, February 25; May 9; July 16; October 24 (cattle and sheep). *Newhaven, September 11; October 30 (horses, cattle, and sheep, and a great holiday fair). *Plesley, May 6,; October 29 (horses, cattle and sheep). *Ripley, Wednesday in Easter week; October 23 (horses and cattle). *Sawley, November 12 or Saturday before (foals). Tideswell, May 3 (cattle); second Wednesday in September; October 29 (cattle and sheep). Winster, Easter Monday. Wirksworth, Shrove Tuesday; May 12; September 8; October 4 and 5 (cattle).

Those places which are marked (*) have no weekly markets. Buxton and Cromford have a market, and no fairs.

Divisions, Towns, &c.—The divisions of Derbyshire for civil purposes were antiently called wapentakes; and of these divisions the 'Domesday Survey' mentions five: Scarvedale (Scarsdale), Hamestan (supposed to be what is now called the High Peak Hundred), Morlestan (Morleston), Walecross (supposed to be what is now the hundred of Repton and Gresley), and Apultre (Appletree); beside a district called Peche Fers (Peak Forest). A document of a somewhat later date (the 'Hundred Roll,' A.D. 1273) speaks of the wapentakes of Peck (Peak), Scarvedale, Apeltre, Repindon (Repington or Repton), Greselegh (Gresley), Littlechirch (Litchurch), and Wyrkesworth (Wirksworth). Other records speak of the hundreds of Risley (Gresley?), and Sawley. The present division is as follows. The Wirksworth division is still called wapentake: the others are called hundreds.

I. High Peak (203,190 acres), North and North-West, and Central. Population in 1831, 47,485.

II. Wirksworth (73,880 acres), West and Central. Population in 1831, 23,287.

III. Scarsdale (144,750 acres), East and Central. Population in 1831, 53,582.

IV. Morleston and Litchurch (77,440 acres), South-East. Population in 1831, 61,779.

V. Appletree (108,170 acres), South-West and Central. Population in 1831, 32,483.

VI. Repington or Repton and Gresley (55,750 acres), South. Population in 1831, 18,554.

There is in Derbyshire only one parliamentary borough and market-town, Derby, on the Derwent (population in 1831, 23,627) [Derby]; the other market-towns are sixteen. Of the following an account will be found under their respective articles:—Alfreton, between Derby and Chesterfield (population in 1831, 5691); Ashbourne, near the Dove (pop. 4884); Ashover, near the East Moor (pop. 3179); Bakewell, on the Wye, (pop. 9503); Buxton, near the head of the Wye (pop. 1211); Chapel-en-le-Frith, in the High Peak (pop. 3220); Chesterfield, on the Rother (pop. 10,688); and Wirksworth, between Derby and Matlock (pop. 7754). The population given above is that of the whole parish, except in the cases of Buxton, which is a chapelry of Bakewell parish, and the population of which is included in the statement given of the population of Bakewell, and of Derby, which is a borough containing parts of five parishes. Of the other towns, viz., Belper, Crich, Cromford, Dronfield, Heanor, Ilkeston, Tideswell, and Winster, and of the village of Matlock, we subjoin an account. We observe here, that Messrs. Lysons omit Dronfield from their list of market-towns, stating the market to have been discontinued; and Mr. Farey omits Ashover, Heanor, and Ilkeston. There are several other places which formerly had markets; those at Bolsover [Bolsover], Higham-in-Shirland, Hope, Matlock, Measham, and Sawley appear to have been discontinued within memory.

Belper is on the east bank of the Derwent, eight miles north of Derby. It is a township and chapelry, in the parish of Duffield, in Appletree hundred. The prosperity of Belper is of modern date, and is to be principally ascribed to the establishment of the cotton-works of Messrs. Strutt. It is now one of the most flourishing towns in Derbyshire. The older buildings form a very insignificant portion of the place, which consists chiefly of more modern and better erections. New buildings, with neat exteriors, flower-gardens, orchards, and plantations are fast spreading over the rising grounds about the town; and on the opposite side of the Derwent is Bridge Hill, the seat of G. B. Strutt, Esq. Gritstone, which the neighbourhood furnishes of excellent quality, is much used in building. The antient chapel, dedicated to St. John, being too small for the increased population of the place, a new church has been erected at an expense of nearly 12,000*l.*, defrayed partly by subscription and partly by a grant from the commissioners for building new churches. It stands on a bold elevation above the town, and from its situation and architecture, which is of the florid English style, is a great ornament to the place. It will accommodate 1500 persons, besides 300 children; and two-thirds of the sittings are free. The antient chapel is still used for evening lectures and for a school-room. There are places of worship for Unitarians (built in 1782, chiefly at the expense of Messrs. Strutt), Independents, General and Particular Baptists, and Wesleyan and Primitive Methodists. There is a stone bridge of three arches over the Derwent. The population of the chapelry of Belper in 1831 was 7890; half the males above twenty years of age are employed in manufactures. The chief establishments are those of Messrs. Strutt, who have four cotton-mills; and of Messrs. Ward, Brettle, and Ward, the most extensive hosiery manufacturers in the kingdom: they make both silk and cotton hose. The manufacture of nails, though thought to be declining, is still considerable. Seams of coal are worked with advantage about a mile from Belper. The market is on Saturday. Coaches to or from London and Manchester, Birmingham and Sheffield, Nottingham and Manchester, pass through the town daily. Many of the tradesmen hold some land, and many persons, whose principal occupation is in trade or manufacture, are also partially occupied in agriculture.

The living of Belper is a perpetual curacy in the gift of the vicar of Duffield; the yearly value is 158*l.*, with a glebe-house. The state of education, according to the parliamentary return of 1833, was as follows:—1 infant school, 50 boys, 30 girls; 21 day-schools, 356 boys, 288 girls, all instructed at the cost of the parents; 7 Sunday-schools, 935 boys, 1027 girls: three of the Sunday-schools have lending libraries attached, and one of them (of above 600 children) is taught on the Lancasterian system. There are two neat almshouses for aged people, with a small endowment.

Crich is a market-town and parish, chiefly in the hundred of Morleston and Litchurch, but extending into the hundred of Scarsdale and the wapentake of Wirksworth. It is between the rivers Amber and Derwent, on the road from Alfreton to Wirksworth, five miles west of Alfreton and five east of Wirksworth, and about twelve miles north from Derby. The town is built on a considerable limestone hill that overlooks all the eminences round it. The church forms a very conspicuous object: it has a very tall spire. On a cliff near the village is a circular tower of modern erection, from which an extensive and beautiful prospect is obtained. The parish of Crich is divided into three parts: Crich township, 3770 acres, 2115 inhabitants, Litchurch and Morleston hundred; Wessington township, 1260 acres, 465 inhabitants, Scarsdale hundred; Tansley hamlet, 1150 acres, 507 inhabitants, Wirksworth wapentake. Total, 6180 acres, 3087 inhabitants. The inhabitants of the township of Crich, which includes several villages round the town, are chiefly engaged in working the lead-mines round, in getting limestone, which is excellent both for agriculture and building, and burning it to lime, in the manufacture of stockings, and in agriculture. There was antiently a market at Crich; but it had been discontinued. In the middle of the last century an attempt was made to revive it, but the attempt failed; in 1810 it was re-opened, and is still held. It is on Thursday, but is not much resorted to. There are two fairs in the year for cattle, pedlars' wares, &c.

The living of Crich is a vicarage, of the annual value of 98*l.*, with a glebe-house, in the gift of Sir Willoughby Dixie. There are places of worship in the parish for Wesleyan and Primitive Methodists and General Baptists.

Crich township contained in 1833 10 day-schools, in which were 115 boys and 112 girls; and 3 Sunday-schools, with 157 boys and 140 girls. In the other divisions of the parish were 1 day-school, with 36 boys in it, and 2 Sunday-schools, containing 137 boys and 92 girls.

Cromford is a market-town, township, and chapelry in the parish and hundred of Wirksworth, chiefly on the north bank of the Derwent. It is in a deep valley, enclosed on the north, south, and west by lofty limestone rocks. Cromford, like Belper, owes its prosperity to the cotton manufacture. The late Sir Richard Arkwright erected here a spacious cotton-mill on the north side of the Derwent; it is now occupied by Messrs. R. and P. Arkwright, who employ in these mills and those at Masson, a little higher up the Derwent, 800 persons. The houses and mills are chiefly built of gritstone. The church is a plain building, begun by the late Sir R. Arkwright and finished by his son; there was a more antient chapel, but it has been demolished many years.

The population of Cromford, in 1831, was 1291. Lead-mines are worked in the neighbourhood; lapis calaminaris is ground and prepared, and red lead manufactured. The Cromford canal terminates here; and the Cromford and High Peak railway joins the canal a short distance south of the town. The land in the township chiefly belongs to R. Arkwright, Esq.; every man employed at the mills capable of purchasing a cow has a piece of land sufficient to maintain it allotted to him. The market is on Saturday, and there are two fairs in the year. The education returns for 1833 give 1 infant school, 10 boys, 12 girls; 2 day-schools, 34 boys, 8 girls: all these are taught at the expense of their parents; 2 day and Sunday-schools, partly supported by P. Arkwright, Esq., 110 boys, 82 girls, who attend daily; 50 boys, 70 girls, who attend on Sundays.

Mr. Arkwright was building in 1833 two new school-rooms. There is a Methodist chapel. There are almshouses for six poor widows.

The living of Cromford is a perpetual curacy, of the annual value of 96*l.*, in the gift of R. Arkwright, Esq.

Dronfield is a market-town in the hundred of Scarsdale, on the road between Chesterfield and Sheffield, about 5½ miles from the former and 6½ from the latter, and 30 miles from Derby. The parish is extensive, containing 15,580 acres, or more than 24 square miles. It contains, beside Dronfield town (population in 1831, 1653), the townships of Little Barlow (pop. 58), Coal Aston (pop. 300), and Unstone (pop. 586); the chapelries of Holmsfield (pop. 499), and Dore (pop. 527), and the hamlet of Totley (pop. 351); the population of the whole parish was 3974. The parish church is beautifully situated on a hill on one side of the town. It has a fine tower and spire, chiefly in the decorated English style. The chancel has been very fine; it contains three rich stone stalls, the foliage of which is very beautiful; but the large east window has been deprived of its tracery. There are meeting-houses for Quakers, Wesleyans, and Independents.

There are some manufactures carried on at Dronfield, chiefly of iron goods, as cast iron chains and nails, axes, chisels, and other edge tools, common cutlery, and agricultural implements. The market, which Farey states to be much declined and which other authorities state to be discontinued, is on Thursday. There were in 1833 a well-endowed free-school for 60 boys and 20 girls; 3 boarding-schools (1 was for day-scholars also), with nearly 100 children; 6 day-schools, with nearly 200 children; 2 Sunday-schools, with 105 boys and 110 girls. The living is a vicarage, in the gift of the Lord Chancellor; yearly value 224*l.*, with a glebe-house.

The dependent districts of the parish have some manufactures similar to those of the town itself. They contained in 1833 6 day-schools, with 203 children: some of these schools have small endowments; 1 day and Sunday-school, with 60 day and 70 Sunday scholars, partly supported by an endowment; and 5 Sunday-schools, with 253 children. (*Education Returns for* 1833.) Dore (which appears to include Totley) is a perpetual curacy of the yearly value of 90*l.*, in the gift of Earl Fitzwilliam; Holmsfield is also a perpetual curacy of the yearly value of 97*l.*, with a glebe-house. Beauchief Abbey will be noticed presently.

Heanor is a market-town or village in the hundred of Morleston and Litchurch, on the road from Derby to Mansfield (Notts.), about nine miles from Derby. The parish is extensive, containing 6870 acres (or nearly 11 square miles), and a population (in 1831) of 5380 inhabitants, thus distributed:—Heanor township, 2672; Codnor and Loscow township, 1439; Shipley township, 632; and Codnor Castle and Park Liberty (extra-parochial), 637. Heanor is well situated for trade, the Erewash canal passing through the parish, and the neighbouring district having many coal-pits. There are manufactories for cotton goods, hosiery, and bobbin-net lace. The market, according to Messrs. Lysons, is on Wednesday; it is very small, and some authorities state that it has been discontinued. The living is a vicarage, of the yearly value of 109*l.*, in the gift of the Lord Chancellor. The education returns for 1833 comprehended 12 day-schools, with 234 children, and 5 Sunday-schools, with 824 children. There are Independent, Particular Baptist, and Wesleyan Methodist meeting-houses in the parish.

Ilkeston is in the hundred of Morleston and Litchurch, nine miles from Derby, on one of the roads to Nottingham, in the valley of the Erewash. The parish contains 2290 acres, and a population of 4446, a considerable portion of whom are engaged in manufactures or in the coal-pits in the neighbourhood. The church has a stone screen in the early English style of architecture, and three stalls in the chancel. The principal manufactures are of stockings and lace. A warm mineral spring, the properties of which are said to differ from those of all others in the kingdom, and to resemble those of the Seltzer water, has been lately discovered, and is coming rapidly into repute. The water, taken internally, and the baths, have been found efficacious in many complaints. The Erewash and the Nutbrook canals both pass through the parish. The market is held occasionally on Thursdays for fruit and vegetables. The living is a vicarage, of the annual value of 150*l.*, with a glebe-house, in the gift of the duke of Rutland. The education returns for 1833 gave 17 day-schools (1 with a small endowment), containing 215 boys and 144 girls; and 7 Sunday-schools, with 427 boys and 414 girls, one of which has a lending library attached.

Matlock is in the wapentake of Wirksworth, on the banks of the river Derwent, 18 miles from Derby. The parish of Matlock contains 3960 acres, or more than 6 square miles. The five principal villages in it are Matlock, Matlock Baths, Matlock Bank, Harston or Hearthstone, and Ryber. The village of Matlock is antient, and chiefly inhabited by the persons employed in the neighbouring lead-mines and in the cotton manufacture. Matlock bath is nearly a mile and a half distant from the village, nearer to Derby, and is much resorted to by visiters, as much for the beauty of the situation as for the baths. There are three inns or hotels, several lodging-houses, and a museum, containing an excellent and tastefully-arranged collection of minerals, shells, and birds, and some articles of sculpture. There is a bridge over the Derwent at Matlock village. The church is a small edifice in the later English style of Gothic architecture. There are several Dissenting meeting-houses in the parish. The population of Matlock, in 1831, was 3262. The living is a rectory, of the annual value of 320*l.*, with a glebe-house, in the gift of the dean of Lincoln. The market formerly held at Matlock has been discontinued, but the place is well supplied with provisions. The education returns for 1833 comprehended 11 day-schools, 1 of them supported by endowment, and containing 30 boys, the other 10 containing 127 boys and 92 girls; 2 boarding-schools, with 12 boys and 24 girls; and 4 Sunday-schools, with 214 boys and 233 girls.

Matlock village and bath are in a dale which extends for two miles north and south, bounded on each side by steep rocks, whose naked sides rise to the height of nearly 300 feet; the summits are sometimes bare, sometimes covered with wood. Through this dale the Derwent flows, and its banks are lined with trees, except where the rocks approach, and rise almost perpendicularly from the water. Not far from Matlock is Willersley Castle, built by Sir R. Arkwright, and occupied by his descendants. The Matlock waters were brought into notice about 1698, when a bath was paved and built; but the place for a long time presented few conveniences. At later periods other springs were discovered, and new baths formed. The waters have a temperature of about 66° or 68° of Fahrenheit. They are considered to resemble the Bristol waters, and are recommended in bilious disorders, in phthisis, diabetes, and other complaints.

Tideswell is a market-town and parish in the High Peak hundred, about half a mile out of the road from Derby to Manchester by Chapel-en-le-Frith, nearly 35 miles from Derby. It is a small town situated in a bottom amid bleak naked hills: immediately round the town are some well-grown trees. The houses are low, irregularly situated, and ill built, and the general appearance of the place indicates the absence of wealth, comfort, and cleanliness. A rivulet of clear water runs through the town; the ebbing well, which is supposed to have given name to the town, has ceased to flow. The church is a fine building in the form of a cross, built about the middle of the fourteenth century, and principally in the decorated English style. The chancel is lighted by nine richly ornamented Gothic windows, and contains the monument of Robert Pursglove, suffragan bishop of Hull in the reign of Mary, and founder of a free-school and almshouses for twelve poor people at Tideswell. The tower of the church is at the west end: it is embattled, and has eight pinnacles. There was formerly a chapel of higher antiquity than the church, but the ruins were demolished some time since. There is a market on Wednesday. That part of the parish which contains the town had in 1831 a population of 1553, many of them are engaged in spinning and weaving cotton: previous to the introduction of the cotton manufacture, mining was the predominant occupation. The hamlets of Litton and Wheston, and the chapelry of Wormhill, which are comprehended in Tideswell parish, had in 1831 a population of 866, 75, and 313, respectively, making the aggregate population of the parish 2807. The living of Tideswell is a vicarage, in the peculiar jurisdiction of the dean and chapter of Litchfield, in whose gift it is: the annual value is 109*l.*, with a glebe-house: the perpetual curacy of Wormhill is of the annual value of 270*l.*, with a glebe-house, and is in the gift of trustees.

In 1833, beside the free-school (which contained 71 boys), there were four day-schools, containing about 60 boys and 100 girls; and two Sunday-schools, one supported by the church people, containing 45 to 50 boys; the other by the Methodists, containing 75 boys and 85 girls. In Wheston, Wormhill, and Litton, were four day-schools (one having a very small endowment), containing 70 to 80 children; and two Sunday-schools, containing about 100 children.

Winster is a market-town and chapelry in the parish of Youlgrave, in the hundred of High Peak. It lies between two roads which lead from Derby to Manchester, one by Wirksworth, the other by Ashbourne: by the former it is 24 miles from Derby, by the latter more than 25. This little town runs along the side of a steep eminence. The houses are built of limestone, and are partly thatched and partly covered with stone: they are intermingled with orchards and gardens. The church is small; it has preserved some features of Norman architecture, but it has been much altered. The market is on Saturday. The population of the chapelry in 1831 was 951: that of the whole parish (which is large, and extends into Wirksworth hundred) was 3681: the inhabitants are chiefly engaged in mining. The living of Youlgrave is a vicarage, in the gift of the duke of Devonshire, of the annual value of 214*l.*, with a glebe-house: the perpetual curacy of Winster is worth 104*l.* a year, and is in the gift of the freeholders. The chapelry contained in 1833 one infant school (with above 40 children); three day-schools (one partially endowed), with more than 120 children, and two Sunday-schools, containing 120 boys and 160 girls. There is a Wesleyan Methodist chapel. In the whole parish there were (beside the above) 9 day-schools (some of them partly supported by donation or endowment), with 233 children, and 7 Sunday-schools, with 524 children.

There are several barrows on the commons in the neighbourhood of Winster; in one which was opened in 1768 several antiquities were found.

Divisions for Ecclesiastical and Legal Purposes.—Derbyshire is in the diocese of Litchfield and Coventry: it constitutes the archdeaconry of Derby, which is subdivided into the six rural deaneries of Ashbourne, Castillar, Chesterfield, Derby, High Peak, and Repington, or Repton. The deanery of High Peak has by some been called the archdeaconry of Derby, as though this were an ecclesiastical subdivision of the county. The number of parishes was given by Camden from Wolsey's list at 106; but later authorities make them more numerous; Pilkington states them at 116, their dependent chapelries at 69, and the extra-parochial chapels at 2: Messrs. Lysons state the parishes at 117; with 67 chapels, in 52 of which (49 parochial, 3 extra-parochial) the rites of marriage and sepulture are performed; many of these are frequently described as parish churches. The population returns contain a list of 140 parishes (beside 4 which are chiefly in other counties), 3 extra-parochial chapelries, and 46 dependent chapelries. The difference between these numbers and those given by Messrs. Lysons, may be partly accounted for by supposing several of the dependent chapelries to be entered as distinct parishes. Of the 117 parishes given by Messrs. Lysons, 50 are rectories, 58 vicarages, and 9 donatives, or perpetual curacies. Some of the Derbyshire parishes are very large, especially those in the High Peak hundred. Glossop parish contains 49,960 acres, or more than 79 square miles; Bakewell, 43,020, or above 67 square miles; Hope, 36,160, or above 56 square miles; and Hartington (in Wirksworth hundred), 24,160, or above 37 square miles: 9 other parishes in the county have from 10,000 to 20,000 acres, or from 15 to 30 square miles.

Derbyshire is in the midland circuit: the assizes and the quarter-sessions are held at Derby, except the Easter sessions, which are held at Chesterfield. Until the year 1569 this county and Nottinghamshire formed but one shrievalty. Until the reign of Henry III. the assizes for both counties were held at Nottingham: afterwards, until Derby was made a distinct shrievalty, they were held alternately at Nottingham and Derby.

Beside the ordinary county jurisdiction, Derby has some legal peculiarities, the relics of the institutions of former times. The hundred of Appletree and the honour of Tutbury form parts of the duchy of Lancaster. The courts of pleas of the duchy, commonly called the three weeks' courts, are held at Sudbury for the hundred of Appletree, and at Tutbury (which is in Staffordshire) for the honour of Tutbury. The jurisdiction of these courts extends to most places in the county: in them all debts and damages under forty shillings are recoverable. The Peveril court has likewise a very extensive jurisdiction; actions are brought in it for the recovery of small debts, and the proceedings are more expeditious and less expensive than in the courts at Westminster. This court is held at Basford, near Nottingham.

Derbyshire has some peculiar laws and regulations connected with the working of the lead-mines. These laws and regulations are of very high antiquity. The principal part of the county where lead ore is found in any considerable quantity is called 'the King's Field,' and comprehends nearly all the wapentake of Wirksworth and a considerable part of the High Peak hundred. 'The King's Field' has been from time immemorial let on lease. The lessees (of whom, when Pilkington wrote his account of Derbyshire, A. D. 1789, there were two) have each in his respective district a steward and barmasters. The steward presides as judge in the barmote courts, and, with twenty-four jurymen, chosen every half-year, determines all disputes which arise respecting the working of the mines. Debts incurred in working the mines are cognizable in these courts. These courts meet twice a year, or oftener if need be. The court for the High Peak district meets at Monyash, that for the wapentake district at the town of Wirksworth.

The office of the barmaster is principally to put miners into the possession of veins that they have discovered, and to collect the proportion of ore to which the lessee of the crown or the lord of the manor has a claim. When a miner has discovered a new vein of ore in 'the King's Field,' he may acquire a title to the exclusive possession of it, provided it be not in a garden, orchard, or high road, by a proper application to the barmaster of the liberty. Should the miner neglect to work the vein, the barmaster may, after a certain time, dispose of it to any one who is willing to try it.

There are four members of parliament returned for the county (two for the northern and two for the southern division), and two for the borough of Derby. The northern division of the county includes the hundreds of High Peak and Scarsdale, and part of the wapentake of Wirksworth: the principal place of election is Bakewell, and the polling stations are Bakewell, Chesterfield, and Chapel-en-le-Frith. The southern division includes the hundreds of Appletree, Morleston and Litchurch, and Repton and Gresley, and part of the wapentake of Wirksworth: the principal place of election is Derby, and the polling stations are Derby, Ashbourne, Wirksworth, Melbourne, and Belper.

History and Antiquities.—Before the Roman conquest Derbyshire appears to have been included in the territory of the Coritani, who, with the Cornavii, occupied the whole of the midland district from the Lincolnshire coast to the upper part of the Severn and the Dee. Upon the conquest of South Britain by the Romans, and its division into provinces, Derbyshire was included in the province of Flavia Cæsariensis, not (as Pilkington, and after him, Messrs. Lysons state) of Britannia Prima.

The barren moors of this county abound in masses of gritstone, and single stones of vast size appearing above the surface: many tors (as Mock Beggar Hall, on Stanton moor, between Winster and Bakewell, Robin Hood's Mark, on Ashover common, &c.) and rocking stones have been found, and many rock basins; but all these, to which it was once common to ascribe a druidical origin, seem referable, like the granite tors of Cornwall and Devonshire [CORNWALL], rather to natural causes. There are however circles of stones some upright stones, and tumuli or barrows of earth and stones, (called in Derbyshire, 'lows'), and some rude military works which appear to be memorials of the early inhabitants. The most remarkable of these monuments is the stone circle of Arbelows, or Arbor-low, two or three miles north-west of the town of Winster. An elliptical area of fifty-two yards by forty-six (having the greater diameter in a direction north and south), is enclosed by a ditch six yards broad, and an outer bank formed of the soil thrown out from the ditch, five yards high on the inside. In the inclosure there are openings or entrances on the north and south sides about fourteen yards wide, and adjacent to the southern entrance is a small mound or barrow. About thirty rough unhewn stones about five feet long by three broad, and one foot thick, lie round the inclosure, having their smaller ends pointing towards the centre: there is reason to think these once stood obliquely on one end. About fourteen smaller stones are intermingled with these in an irregular manner, and there are three stones lying near the centre, one of which is larger than any other within the area. (Pilkington's *Derbyshire*)

The antient British road, the Rykneld Street, and the Roman road, which usually coincided with it, cross this county in its whole extent from south-west to north-east, from the borders of Staffordshire to those of Yorkshire. The Rykneld Street enters Derbyshire where Monk's-bridge, over the Dove, now stands, and runs north-east in the direction of Little Chester, supposed to be the Roman station Derventio: the Rykneld Street is supposed to have passed the Derwent by a ford, perhaps at the town of Derby, the Roman road by a bridge a little higher up the river. [Derby.] The two roads meet again near Derventio, and they may be traced in a direction nearly N.N.E. towards Chesterfield.

Chesterfield has been supposed to be a Roman station, the Lutudarum of Ravennas; and the first part of the name of the town (Chester—which, with its kindred forms, cester and caster, usually indicates the site of a Roman station) and the discovery of Roman coins there give probability to the supposition. The name of Lutudarum in an abridged form (LVT and LVTVD) is stamped on three Roman pigs of lead (now in the British Museum) which have been found at different times near Matlock. (*Library of Entertaining Knowledge; Townley Gallery*, vol. ii., p. 288.)

A second Roman road has been traced from Brough in Hope Dale to Buxton, both of which are ascertained to have been Roman stations. At Brough three sides of the station, which was an oblong 310 feet by 270, are still perfect; and the foundations of a temple and another large building, with other antiquities, have been discovered. At Buxton several Roman baths have been discovered, and three of their roads at least, the one mentioned above, one from Derventio, and a third from Mancunium (Manchester), meet here,—a sufficient indication of the site of a station. It is conjectured that it was the Aquæ mentioned by Ravennas. Another Roman road, locally designated Long Lane, runs through the county from the river Dove at or near Rocester, which from its name was probably a station, to Derventio, and appears to have continued in the same line from thence into Nottinghamshire. Another Roman road, locally designated the Doctor's Gate, runs from the station of Melandra Castle, in Glossop parish, on the border of Cheshire, to Brough. There are some traces of other roads.

Derventio, now Little Chester [Derby], appears to have been the most considerable Roman station in the county. The stations at Buxton, Brough in Hope Dale, and Melandra Castle in Glossop, have been mentioned. The last is on a moderate elevation at the meeting of two mountain streams: it is nearly square, 366 feet by 336; the ramparts and part of the ditch still remain, and the gates and the site of the Prætorium may be discovered: there are the foundations of many buildings on the side sloping to the water. It has been conjectured, but on uncertain grounds, that there were Roman stations at Parwich, between Buxton and Ashbourne, and at Pentrich, on the Rykneld Street, between Derventio and the modern Chesterfield: there are camps of the Roman form at both these places. The two camps, one on a hill above Castleton, and the other at Combe Moss, four miles from Buxton, may perhaps have been Roman summer camps.

Of Roman antiquities the most remarkable are an altar preserved at Haddon Hall, a silver plate found in Risley park, and the pigs of lead found near Matlock. These last are sufficient proofs of the Romans having wrought the lead mines of Derbyshire; and the number of their roads and stations indicates the importance they attached to the district. It is considered by some (Glover, *Hist. of Derbyshire*) that the working of the mines was anterior to the Roman conquest.

In the Saxon division of England, Derbyshire was comprehended in the kingdom of Mercia; and Repandun, or Repton, on the south bank of the Trent, was one of the royal residences. In the great invasion of England by the Danes in the time of Ethelred I. and Alfred [Alfred], Derbyshire was overrun by them, and in the wars which Alfred and his successors maintained against them this county was frequently the scene of contest. The town of Derby was repeatedly taken and retaken. [Derby.] At the Norman conquest considerable grants of land within the county were made to Henry de Ferrers, whose son Robert was the first earl Ferrers. Another Robert, son of the first earl Ferrers, was created earl of Derby in 1138. William Peverel, a natural son of the Conqueror, received also considerable grants. He built the castle of the Peak; and he, or his son, is supposed to have built the original Bolsover Castle. [Bolsover.] The Peak castle is now an 'ill-shapen ruin,' situated on the verge of the rocky precipice that forms the roof of the Peak cavern at Castleton. It was small, but, from its situation, very strong. In the civil war in the reign of Henry II., Robert, earl Ferrers and Derby, who had supported prince Henry in his rebellion against his father, surrendered his castles of Duffield in Derbyshire and Tutbury in Staffordshire to the king. He was afterwards deprived of the earldom of Derby by Richard I., who bestowed it on his own brother John. In the civil war in the time of John, William earl Ferrers, who had obtained a new grant of the earldom of Derby, and who was one of the king's party, took the castles of the Peak and Bolsover, which had by this time passed out of the hands of the Peverel family, and were held by some of the party of the insurgent barons. In the reign of Henry III. the earl of Ferrers and Derby was one of the most active of the insurgent barons; but having been worsted and taken prisoner by Henry, the king's nephew, at the battle of Chesterfield, he was deprived of the earldom of Derby, with the vast possessions attached to it. These were afterwards given to Edmund, earl of Lancaster, son of Henry III., and thus eventually formed part of the domains of the duchy of Lancaster. No public events of interest are connected with Derbyshire until after the Reformation. The earldom of Derby, in connection with that of Lancaster, descended from prince Edmund to his son Thomas, who headed an insurrection of the barons against Piers Gavestone and Hugh de Spencer, the successive minions of Edward II.: the failure of this last enterprise led to the death of the earl, who was defeated and taken at Boroughbridge, and beheaded in Pontefract Castle in 1322. He was succeeded in his titles and possessions by his brother Henry, who supported queen Isabella and the earl of March (Roger Mortimer) in their successful attempt to dethrone Edward II. The earl was appointed head of the council of twelve bishops and peers, to whom the government was ostensibly intrusted. He died in 1344, and was succeeded in the earldoms of Lancaster and Derby by his son Henry, who had, with the title though not the possessions of earl of Derby, commanded the English forces in Guienne with signal success. This Henry died without male issue; his daughter Blanch married John of Gaunt, or Ghent, son of Edward III., who thus became earl of Lancaster and Derby, and transmitted these titles to his son, afterwards Henry IV. The earldom of Derby was conferred by Henry VII. upon his supporter, lord Stanley, in whose family it has ever since continued.

Derbyshire contains various relics of the middle ages, baronial, ecclesiastical, and monastic. Besides the Peak Castle, there are some remains of Codnor Castle, near Heanor, the antient residence of the Greys of Codnor: these remains are partly converted into a farm-house. Haddon Hall, the seat of the duke of Rutland, is on the north-east or left bank of the Wye, below Bakewell: it consists of two courts of irregular form, approaching to squares, surrounded by suites of apartments, and was evidently designed to have a domestic, not a military character. The chapel and the hall, the most antient parts, were erected in the earlier part of the fifteenth century, and no part of the edifice appears to be of later date than the reign of Henry VIII., except some of the interior fittings, which may be of the time of Elizabeth. The situation is beautiful, and the variety of the outline and the fine trees round the hall render it a very picturesque object. Hardwick Hall is a curious specimen of the style of domestic architecture in Elizabeth's reign, and has remained unaltered since the time of its erection; it is between Chesterfield and Mansfield, and belongs to the duke of Devonshire. Some of the furniture is perhaps older than the house itself, and was removed from the old hall, now in ruins, near the present mansion. There is at Hardwick some embroidery done by Mary, queen of Scots, who was imprisoned here and at Chatsworth and South Winfield for some time. South Winfield manor-house, near Alfreton, was built in the reign of Henry VI., and ruined in the civil wars of Charles I.: the remains present some beautiful features.

The churches of Derbyshire contain some very antient portions. Repton church has under the chancel a very curious Norman or rather Saxon crypt, which there is reason to suppose was a part of the conventual church destroyed here by the Danes, A.D. 874. The rest of the church is of a later period; the architecture is varied, partly Norman, partly early English, and partly decorated English: the tower and spire, which are very lofty and of fine outline, are in the perpendicular English style. Melbourne church, near the border of Leicestershire, is a fine example of early Norman architecture, and is nearly in its original state. It has been conjectured, but without sufficient reason, to be as antient as the seventh century. The desecrated chapel at Streetly is a Norman edifice, perfect, with the exception of the windows, which have been enlarged, and the roof: the ornaments are elaborate and well executed. The remains of early Gothic architecture in Derbyshire are few and by no means remarkable, except All Saints church at Derby [DERBY], and perhaps Ashbourne, Bakewell, Chesterfield, and Dronfield churches, the last of which has been noticed above. [ASHBOURNE, BAKEWELL, CHESTERFIELD.]

The monastic establishments of Derbyshire were neither large nor wealthy; there are very few remains of them. Some remains of Repton priory may be seen in the school at Repton and in the master's house. Repton has been noticed as a residence of the kings of Mercia. The priory was the place of sepulture for several of that royal race. After the old Saxon priory was destroyed by the Danes (see above), a monastery of Black (or Augustinian) canons was founded here by Maud, widow of Ranulph, second earl of Chester. Its yearly revenue at the dissolution was 167*l.* 18*s.* 2*d.* gross, or 118*l.* 8*s.* 6*d.* clear. There are at Yeaveley, four miles south of Ashbourne, some ruins of a chapel, formerly a preceptory of the order of St. John of Jerusalem. Of Dale Abbey, 6½ miles east of Derby, founded in 1204, for Premonstratensian Canons (clear yearly revenue, at the dissolution, 144*l.* 12*s.*), there are no remains, except the arch of the east window of the church. Beauchief Abbey, Norton, near Sheffield, is just within the boundary of Derbyshire: it was founded in 1183, for Premonstratensian or White Canons, by Robert Fitz Ranulph, lord of Alfreton, said to have been one of the murderers of Thomas à Becket, in expiation of whose murder the abbey was built, and to whom, when canonized, it was dedicated. Its yearly revenues, at the dissolution, were 157*l.* 10*s.* 2*d.* gross, or 126*l.* 3*s.* 4*d.* clear. The only part of the abbey now remaining is the west end of the conventual church, which is used as the chapel of the extra-parochial district of Beauchief. The architecture is plain, but the situation amidst woods and hills delightful. Dr. Pegge denies that Beauchief Abbey was erected in expiation of Becket's death, or that Fitz Ranulph had any connection with that deed.

The principal historical events connected with Derbyshire, since the Reformation, occurred during the civil war of Charles I. The county at first declared for the king, who, after setting up his standard at Nottingham, marched to Derby; but it was soon brought over to the side of the parliament by the activity and influence of Sir John Gell, who, marching from Hull into Derbyshire (October, 1642), with a regiment of foot, only 140 men, raised 200 men at Chesterfield, and, proceeding to Derby, garrisoned that town. South Winfield manor-house was also garrisoned for the parliament. In November, 1642, Sir John drove Sir Francis Wortley and the king's forces from Wirksworth and the Peak, took Bretby House, south of the Trent, which had been fortified by the earl of Chesterfield, and defeated the royalists at Swarkestone bridge on the Trent. Next year (A.D. 1643) he took Bolsover Castle, which the earl of Newcastle had fortified for the king; and his brother, Colonel Gell, took Sutton House, near Chesterfield, which had been also garrisoned for the king by lord Deincourt. The earl of Newcastle is said, however, to have gained a victory over the parliamentarians near Chesterfield: he afterwards took South Winfield manor-house; and the royalists possessed themselves of the northern parts of the county. In March, 1644, there was an engagement on Egginton Heath, near the junction of the Dove with the Trent, in which the victory was doubtful. In the summer of the same year, Sir John Gell took South Winfield manor-house, and defeated the forces sent to relieve it; and General Crawford, another parliamentary commander, took Bolsover Castle and Stavely House. The king, after the battle of Naseby (A.D. 1645), retreated through Derbyshire into Yorkshire, gaining some advantages over Sir John Gell by the way. The subsequent events of the war were unimportant.

The advance of the young pretender to Derby in 1745 has been noticed in the account of the town of Derby. [DERBY.]

STATISTICS.—*Population.* Derbyshire is both an agricultural and manufacturing county; it ranked the twenty-ninth on the list of agricultural counties in 1811, but in 1831 it was the thirty-second, its manufacturing class having increased in a greater proportion than the agricultural class. Of 58,178 males twenty years of age and upwards, inhabitants of Derbyshire in 1831, 18,170 were engaged in agricultural pursuits, 10,593 of whom were labourers; and 8863 were employed in manufactures, or in making manufacturing machinery; there were likewise 10,897 labourers not employed as agriculturists. Of those employed in manufactures, about 1700 were engaged in the cotton-yarn and in the silk manufactures; 1400 in frame-work and twist; 1200 in cotton and silk hosiery; calico and ginghams, 600; lace and twist net, 450; tape, 60; paper, 40; and about 1400 not accurately classed, engaged in some of the above manufactures and in the preparation of dye colours, &c.; of these about 900 were employed in the town of Derby.

The following summary of the population taken at the enumeration of 1831, exhibits the number of inhabitants, &c., in each hundred of the county.

HUNDREDS, &c.	HOUSES.				OCCUPATIONS.			PERSONS.			
	Inhabited.	Families.	Building.	Uninhabited.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	All other families not comprised in the two preceding classes.	Males.	Females.	Total of Persons.	Males twenty years of age.
Appletree . .	6,143	6,542	23	180	2,778	2,689	1,075	16,212	16,271	32,483	7,924
High Peak . .	8,911	9,335	115	565	2,619	4,246	2,470	23,654	23,831	47,485	11,832
Morleston and Litchurch . .	7,322	7,754	36	184	2,036	3,154	2,564	18,877	19,275	38,152	9,182
Repton and Gresley	3,664	3,826	26	69	1,728	1,384	714	9,259	9,295	18,554	4,531
Scarsdale . . .	10,552	11,008	91	384	2,841	3,762	4,405	27,072	26,510	53,582	13,324
Wirksworth . .	4,664	4,784	22	275	1,267	1,873	1,644	11,397	11,890	23,287	5,605
Derby (borough) .	4,842	5,071	44	332	55	3,680	1,336	11,269	12,358	23,627	5,780
Totals . . .	46,098	48,320	357	1989	13,324	20,788	14,208	117,740	119,430	237,170	58,178

The population of Derbyshire at each of the four periods of—

		Males.		Females.		Total.		Incr. per cent.
1801	was	79,401	.	81,741	.	161,142	.	
1811	„	91,494	.	93,993	.	185,487	.	15.10
1821	„	105,873	.	107,460	.	213,333	.	15.01
1831	„	117,740	.	119,430	.	237,170	.	11.22

Showing an increase between the first and last periods of 76,028, or not quite 47½ per cent., which is about 10 per cent. below the general rate of increase throughout England.

County Expenses, Crime, &c.—The sums expended for the relief of the poor at the four dates of—

1801 were	£54,459,	which was	6s. 9d.	for each inhabitant.
1811 „	93,963	„ „	10s. 1d.	
1821 „	86,756	„ „	8s. 1d.	
1831 „	78,717	„ „	6s. 7d.	

The sum expended for the same purpose in the year ending 25th March, 1836, was 55,018*l.* 1*s.*, and assuming that the population had increased at the same rate of percentage since 1831, as in the ten years preceding that period, the above sum gives an average of 4*s.* 5*d.* for each inhabitant. All these averages are below those for the whole of England and Wales.

The sum raised in Derbyshire for poor's-rates, county-rate, and other local purposes, in the year ending 25th March, 1833, was 108,074*l.* 6*s.*, and was levied upon various descriptions of property as follows:—

	£	s.
On land	81,846	0
„ dwelling-houses	20,340	6
„ mills, factories, &c.	3,358	3
„ manorial profits, navigation, &c.	2,529	17
	£108,074	6

The amount expended was:—

For the relief of the poor	76,685	18
For suits of law, removal of paupers, &c.	4,211	11
For other purposes	30,226	2
	£111,123	12

In the returns made up for the subsequent years, the descriptions of property assessed for local purposes are not distinguished. In the years 1834, 1835, and 1836, 107,236*l.* 19*s.*, 93,392*l.* 19*s.*, and 80,578*l.* 17*s.*, were respectively raised, and the expenditure in the same years was as follow:—

	1834.	1835.	1836.
For the relief of the poor	£72,720 13	£62,885 15	£55,018 1
In suits of law, removals, &c.	4,163 8	3,422 10	2,981 17
Payment for or towards the county-rate	31,232 12	12,652 9	11,368 3
For all other purposes		13,818 7	11,820 14
Total money expended	£108,116 13	92,779 1	81,197 15

The saving effected in the sums expended for the relief of the poor in 1836, as compared with the expenditure of 1834, is therefore about 24¼ per cent., and the saving effected upon the whole amount is rather more.

The number of turnpike trusts in Derbyshire is 40, as ascertained in 1834; the number of miles of road under their charge was 574; the annual income of that year, arising from the tolls and parish composition, was 38,920*l.* 10*s.* 2*d.*, and the annual expenditure 41,819*l.* 14*s.*

The county expenditure in 1834, exclusive of the relief for the poor, was 12,311*l.* 5*s.* 4*d.*, disbursed as follows:—

	£	s.	d.
Bridges, buildings, and repairs, &c.	778	10	0
Gaols, houses of correction, &c., and maintaining prisoners, &c.	1,781	5	11
Shire halls and courts of justice—building, repairing, &c.	271	16	7
Prosecutions	1,690	3	5
Clerk of the peace	1,020	3	2
Conveyance of prisoners before trial	322	8	7
„ of transports	145	16	8
Apprehending and conveying vagrants	48	14	3
Constables—high and special	393	15	6
Coroner	244	13	0
Payment of debt, principal and interest	4,941	15	0
Miscellaneous	672	3	3

The number of persons charged with criminal offences, in the three septennial periods ending with 1820, 1827, and 1834, were 670,736, and 1314 respectively; making an average of 96 annually in the first period, of 105 in the second period, and of 189 in the third period. The numbers of persons tried at quarter-sessions in each of the years 1831, 1832, and 1833, in respect of which any costs were paid out of the county-rates, were 96, 82, and 68 respectively. Among the persons charged with offences, there were—

	1831.	1832.	1833.
Committed for felonies	85	73	63
„ misdemeanors	11	9	5

The total number of committals in each of the same years was 123, 107, and 82 respectively: of whom

	1831.	1832.	1833.
The number convicted was	82	80	64
„ acquitted	40	24	17
Discharged by proclamation	1	3	1

In 1835, at the assizes and sessions, 175 persons were charged with crimes in Derbyshire. Of these, 14 were charged with offences against the person, 7 of which were for common assaults; 17 for offences against property, committed with violence; 132 offences against property, committed without violence; 3 for uttering counterfeit coin; 7 for poaching; and 2 for misdemeanors. Of the whole number committed, 125 were convicted and 50 acquitted, or no bill found against them. Of those convicted, 21 were transported for life, 2 for 14 years, and 23 for 7 years; 19 were imprisoned for 1 year or above 6 months, and 58 for 6 months and under; 1 was fined, and 1 was discharged on sureties. Of the offenders, 155 were males and 20 were females. Among the offenders 60 could read and write, 56 could read only, 58 could neither read nor write, and the instruction of 1 could not be ascertained. The proportion of the offenders to the population was 1 in 1355.

The number of persons qualified to vote for the county members of Derbyshire is 12,040, being 1 in 19 of the whole population, and rather more than 1 in 5 of the male population twenty years of age and upwards, as taken in 1831. The expenses of the last election of the county members to parliament were to the inhabitants of the county 282*l.* 8*s.* 8*d.*, and were paid out of the general county-rate.

There are six savings-banks in this county. The number of depositors and amount of deposits on the 20th of November, 1832, 1833, 1834, and 1835 respectively, were:—

	1832.	1833.	1834.	.835.
Number of depositors	4829	5086	5380	5710
Amount of deposits	£172,581	177,470	187,253	201,927

The various sums placed in the savings-banks in 1834 and 1835 were distributed as under:—

	1834.		1835.	
	Depositors.	Deposits.	Depositors.	Deposits.
Not exceeding £20	2462	£19,382	2568	£21,933
„ 50	1796	54,310	1905	58,174
„ 100	696	47,851	794	53,843
„ 150	232	28,153	248	30,076
„ 200	145	24,786	142	24,555
Above 200	49	12,771	53	13,346
	5380	187,253	5710	201,927

Education.—The following particulars are obtained from the parliamentary inquiry on education, made in the session of 1835:—

	Schools.	Scholars.	Total.
Infant Schools	46		
Number of infants at such schools; ages from 2 to 7 years:—			
Males		497	
Females		498	
Sex not specified		411	
			1,406
Daily Schools	730		
Number of children at such schools; ages from 4 to 14 years:—			
Males		10,989	
Females		8,723	
Sex not specified		3,390	
			23,102
Schools	776		
Total of children under daily instruction			24,508
Sunday Schools	420		
Number of children at such schools; ages from 4 to 15 and 16 years:—			
Males		16,764	
Females		17,005	
Sex not specified		5,415	
			39,184

Assuming that the population between 2 and 15 years has increased in the same uniform ratio from 1821 to 1834, as the whole population increased between 1821 and 1831, we find the approximate number living between those ages in Derbyshire, in 1834, was 81,982. A very large number of the children attend both daily and Sunday-schools; only 18 of the latter are in places where no other schools kept; and 34 schools, in which there are 2058 child are both Sunday and daily schools. Duplicate entry is therefore known to have been created thus far, and probably in a much larger degree in other places; but this cannot be ascertained with exactness. In a few of the Sunday-schools there are some pupils receiving instruction who are beyond twenty years of age. Making allowance, therefore, for this uncertain data, we may conclude that perhaps not more than two-thirds of the population between 2 and 15 were receiving instruction at the period of the inquiry.

Maintenance of Schools.

Description of Schools.	By endowment.		By subscription		By payments from scholars.		Subscrip. and payment from scholars.	
	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.
Infant Schools			1	12	34	900	11	494
Daily Schools	120	3632	23	646	533	14,393	54	4431
Sunday Schools	6	306	385	35,870	3	72	26	1936
Total...	126	3938	409	37,528	570	15,365	91	6861

The schools established by Dissenters, included in the above statement, are:—

	Schools.	Scholars.
Infant Schools	3	48
Daily „	9	287
Sunday „	166	18,485

The schools established since 1818 are:—

Infant and other daily schools	332	10,600
Sunday Schools	293	28,496

Thirty boarding-schools are daily included in the number of daily schools given above.

No schools in the county appear to be confined to the children of parents of the Established Church, or of any other religious denomination, such exclusion being disclaimed in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists, together with schools for children of Roman Catholic parents.

Lending libraries of books are attached to 90 schools in Derbyshire.

DEREHAM, EAST. [NORFOLK.]

DERG, LOUGH. [DONEGAL.]

DERHAM, the Rev. WILLIAM, D.D., an eminent English divine and philosopher, was born at Stowton, near Worcester, in November, 1657, and received his early education at Blockley in the same county. He was admitted of Trinity College, Oxford, in 1675. Having completed his academic studies, he was ordained, and in 1685 was instituted in the vicarage of Wargrave in Berkshire; and four years afterwards to the valuable rectory of Upminster in Essex, where he spent the remainder of his life. To this residence he was much attached; mainly because it gave him, by its contiguity to London, ample opportunities of associating with the scientific men of the metropolis. He was made canon of Windsor in 1716, and in 1730 he received from his university the diploma of D.D.

He devoted his attention, with great earnestness, to natural and experimental philosophy. He was enrolled a member of the Royal Society; and he contributed a considerable number of memoirs to its Transactions. These papers prove him to have been a man of indefatigable research and careful observation.

His first publication was the 'Artificial Clock-Maker,' which has gone through three or four editions, and is considered a useful manual even now. In 1711, 1712, and 1714, he preached those sermons at Boyle's Lecture which he afterwards expanded into the well-known works 'Physico-Theology' and 'Astro-Theology,' or a demonstration of the being and attributes of God from the works of creation and a survey of the heavens, enriched with valuable notes, and good engravings after drawings of his own. His next separate work was 'Christo-Theology,' or a demonstration of the divine authority of the Christian religion, being the substance of a sermon preached in the Abbey Church of Bath, in 1729. His last published work of his own was entitled 'A Defence of the Church's Right in Leasehold Estates,' written in answer to a work entitled 'An Inquiry into the Customary Estates and Tenant-rights of those who hold lands of the Church and other Foundations.' It was published in the name of Everard Fleetwood.

Dr. Derham also published some of the works of the naturalist Ray, of which he had procured the MSS., and to him the world is indebted for the publication of the philosophical experiments of Dr. Hook. He also gave new editions of other of Ray's works, with valuable additions, original, and from the author's manuscripts; besides editing other works of value, amongst which was the 'Miscellanea Curiosa,' in 3 vols. small 8vo., a work of value even at this time.

A considerable number of his papers were printed in the Philosophical Transactions, from the 20th to the 39th volume inclusive, the principal of which are—

1. Experiments on Pendulums in vacuo.
2. Of an Instrument for finding the Meridian.
3. Experiments and Observations on the motion of Sound.
4. On the Migration of Birds.
5. On the Spots on the Sun from 1703 to 1711.
6. Observations on the Northern Lights, Oct. 8, 1726, and Oct. 13, 1728.
7. Tables of the Eclipses of Jupiter's Satellites.
8. Difference of Time in the Meridian of different places.
9. On the Meteor called Ignis Fatuus.
10. The History of the Death-watch.
11. Meteorological Tables for several years.

Dr. Derham was of an ungainly appearance, small stature, and distorted form. He was not only the moral and religious benefactor of his parishioners, and of all those who came in his way, but he was likewise the physician of their bodies, and their pecuniary friend in all their difficulties. He lived beloved, and died lamented, at his rectory, in 1735, aged seventy-eight.

DERIVATION. The term *law of derivation* almost explains itself. Thus in finding the successive differential coefficients of a power of x, the law is,—to get the next differential coefficient, multiply the last by its exponent, and reduce the exponent by a unit. To treat of derivation in the most general sense would be to write a work on mathematical analysis, of which it may be said that most of its difficulties arise from want of sufficient knowledge of methods of derivation. But there is a more restricted use of the term, derived from the work of Arbogast [ARBOGAST], in which it applies to those laws of derivation which spring out of Taylor's Theorem. Hence the differential calculus, considered either in the manner of Lagrange, or in that of Arbogast, which is the treatment of a particular branch of the subject, is sometimes called the calculus of derivations. Lagrange himself calls the differential coefficient a derived function, the objection to which is the application of a generic term to one of its particular cases. For the successive logarithms, sines, &c., differences, integrals, &c., of a given function, are also functions derived from the original in different ways.

DERMATOBRANCHUS, a genus of Mollusks, established by M. Van-Hasselt and arranged by him among the *Nudibranchiata*. M. de Blainville thinks that its appropriate place is by the side of the *Scyllææ*. M. Rang in his manual, uncertain of its position, consigns it to the Genres non classés at the end of his book.

Generic character.—Animal depressed, semicircular, provided with a considerably large foot, and protected above by an enlarged mantle, rounded anteriorly, narrowed posteriorly, beset with elongated striæ or pustules, which are branchial. A pair of short, approximated, contractile tentacula situated between the head and the mantle. Eyes none? Three apertures on the right side of the body, the anterior opening near the head for the generative apparatus, the second for the vent, and the third for the urinary organ. *Locality*, Coast of Java.

DERMESTES. [DERMESTIDÆ.]

DERME'STIDÆ (Leach), a family of Coleopterous insects of the section Necrophaga (MacLeay). Technical characters:—antennæ short, eleven-jointed, terminated by a compressed club, consisting of three or four joints; palpi small; mandibles short, thick, and generally dentated: head deeply inserted into the thorax; body generally oval, and more or less furnished with scales or hairs; legs short; tarsi five-jointed. The species of this family are for the most part of small size: their larvæ (at least those which are known) are covered with hair, and feed upon animal substances. The principal genera are *Dermestes*, *Ctesias*, *Megatoma*, and *Attagenus*.

The principal distinguishing characters of the genus *Dermestes* are:—antennæ scarcely differing in the sexes; the basal joint thick, the six following joints nearly of equal size, the eighth broader than long, the ninth and tenth very broad, and nearly of equal size, the eleventh also broad, but not equal in size to the two preceding; palpi short and thick; body of an elongated oval shape.

Dermestes lardarius is about a quarter of an inch in length, and of a dull black colour; the basal half of each elytron is of an ashy tint, and has three black spots.

This insect is sometimes very abundant in houses in the neighbourhood of London and elsewhere, and when this is the case, is very destructive, since it will devour almost any animal substance, but we believe only in a dried state.

Dermestes vulpinus is about the same size as the last, from which it may be distinguished by the elytra being totally black, and the sides of the thorax and under parts of the body being covered with white scales.

This insect is brought over in great abundance in ships laden with hides. We have seen them in skins of quadrupeds, both from India and America. The larva is about half an inch in length, and covered with blackish brown hairs: like the perfect insect, it feeds upon dried skins, and hence, when abundant, is very destructive to this sort of property*.

Dermestes murinus is also about a quarter of an inch in length, and of a black colour; the upper parts of the head, thorax, and elytra, are mottled with scales of an ashy tint; the scutellum is of a fulvous colour; the under parts of the body are white.

This species is common in various parts of England, and is found in dried animals which have been suspended in the open air by gamekeepers and other persons.

In the genus *Ctesias* (Stephens), the two basal joints of the antennæ are thick; the six following are nearly of equal size, and rather slender; the ninth joint is rather long, and of an obconic form; the tenth joint is shorter than the last; and the terminal joint is conical. These three joints form together an elongated knob.

Ctesias serra is about an eighth of an inch in length, of a black colour, with yellowish antennæ. It is found under the loose bark of elm-trees. The larva is covered with long hairs †.

Genus *Megatoma* (Herbst). In this genus the two basal joints of the antennæ are thick; the four following are slender; the seventh and eighth joints are larger than the last mentioned, and the remainder form an elongated club; the terminal joint is twice as long as the others in the male, and but slightly elongated in the female.

Genus *Attagenus* (Latreille). Antennæ with the basal joint thick; the second less robust and shorter; the three following joints slender; the sixth, seventh, and eighth joints gradually increasing in size; the remainder forming a three-jointed club, of which the terminal joint is extremely long and almost cylindrical in the male, and of an elongated oval form in the female.

Attagenus Pellio is about an eighth of an inch in length, and of a black colour; the base of the antennæ is yellowish, and there is a round white spot in the middle of each elytron.

This insect is common in houses, and is very frequently found in quills, upon the pith of which it probably feeds.

DERMO'CHELYS. [TORTOISES.]

DERRY, a bishop's see in the archdiocese of Armagh in Ireland. The chapter consists of a dean, archdeacon, and three prebendaries. The diocese embraces the greater part of the county of Londonderry, a small portion of Antrim, a considerable portion of Tyrone, and a part of Donegal. Length from east to west 60 English miles; breadth from north to south 54½ do. It contains 55 parishes, constituting 57 benefices. In 1792 there were in this diocese 51 churches of the establishment. In 1834 the numbers were—churches of the establishment 62; Roman Catholic, 70; Presbyterian, 84; and other places of Protestant worship, 28. In the same year the gross population of the diocese was 367,041, of whom there were 50,350 members of the established church; 196,614 Roman Catholics; 118,339 Presbyterians; and 1,738 other Protestant dissenters; being in the proportion of rather more than five Protestants of whatever denomination to six Roman Catholics. There were at the same time in the diocese 574 schools, educating 37,385 young persons, being in the proportion of $7\frac{28}{100}$ per cent. of the entire population under daily instruction, in which respect Derry stands 5th among the 32 dioceses of Ireland. Of the above schools 74 were in connection with the national board of education.

Derry signifies 'a place of oaks.' In Pagan times, the eminence on which the city and cathedral of Derry now stand, was known as Derry-Calgaich, or the oak grove of Calgach. The place began to be known in ecclesiastical history towards the end of the sixth century, when Columba came hither from Iona, and founded a church. From this period down to the plantation of Ulster it was called from him Derry-Columbkill, and was famous for its abbey and religious foundations. There is no trace of a bishopric here till the time of the council of Rath-breasil in 1118, when this district seems to have been included in the antient diocese of Ardstraw or Rathlury. The distinct episcopal see of Derry was not however established till 1158, when Flahertach O'Brolchain, the then abbot of the monastery, was raised to the dignity of bishop, by decree of the council of Brighmac-Taidhg, over which the celebrated primate Gelasius, who is said to have been the chief instrument in establishing the discipline and influence of the church of Rome in Ireland, presided.

This see remained unreformed, together with those of Raphoe and Clogher, down to the time of the plantation of Ulster. The first Protestant bishop was George Montgomery, nominated to the succession in 1603. Among the succeeding Protestant prelates may be mentioned Bramhall, the able partisan of Strafford; King, the author of the 'State of the Protestants in Ireland under king James's government;' Nicholson the compiler of the English, Scotch, and Irish Historical Libraries; and Hervey, earl of Bristol, distinguished for his zealous patriotism and munificent patronage of the arts. Derry is the richest bishop's see in Ireland. By the return of the Commissioners of Ecclesiastical Revenue and Patronage in Ireland, it appears that on an average of three years ending 1st December, 1831, the net yearly income of this see amounted to 12,159*l.* 3*s.* 6*d.* By the 3rd & 4th Wm. IV. c. 64, this is curtailed by 4160*l.* per annum during the life of the present bishop, which reduction is to be increased to the further amount of 6160*l.* per annum during the lives of his successors. [LONDONDERRY.] There is a very full account of the history and antiquities of this see in the first part of a 'Memoir of the Ordnance Survey of Ireland,' 4to. Hodges and Smith, Dublin, 1837.

DERWENT, DERWENTWATER. [BORROWDALE, CUMBERLAND.]

DERWENT. [DERBYSHIRE.]

DERWISH is a Persian word, properly an adjective, which signifies poor, indigent; as a substantive it is used to denote a religious mendicant, hermit, or any one who retires from social life in order to devote himself entirely to religious contemplation. It is synonymous with the Arabic *Fakîr*, and both expressions are chiefly employed to designate a class of persons in Mohammedan countries nearly corresponding to the different orders of monks among the Christians. It would be difficult to determine the age to which the origin of the Derwishes is to be referred. From time almost immemorial, pious men in the East, as elsewhere, seem to have thought it meritorious to renounce the enjoyment of temporal things and the ties of domestic and social relations, and to live in poverty and solitude for the purpose of turning their thoughts altogether towards spiritual matters. Oriental tradition makes the order of hermits as antient not only as St. John the Baptist or Elias, but even as the time of Seth. In the *Koran* poverty is recommended as meritorious; and Mohammed is reported to have said, 'See that ye come poor before God, for the poor shall have the first place in his mansion.' Jâmi, the well-known Persian poet, is the author of an esteemed work on the lives of the *Sûfîs*, or Mohammedan mystics in the introduction, he divides those 'who seek the future life' into four classes: the *Zâhids*, who being filled with religious faith, look down with contempt on the life on earth, which they consider as imperfect and miserable; the *Fakîrs*, who renounce the world, hoping that they will thus have less to account for, that they shall be hereafter recompensed for present privations, and that their minds will by poverty be rendered fitter for the exercise of virtue; the *Khâdims*, who attach themselves as servants to persons conspicuous for their sanctity; and the *Abids*, who hope to merit future reward by entirely devoting themselves to religious exercises. Among the Turks several orders of Fakîrs or Derwishes exist. The principal one is that of the *Maulavîs*, founded by the celebrated Persian poet Jelâleddîn Rûmî, who died A. D. 1262. The Derwishes of this order have a great monastery at Galata, and another at Iconium. Their demeanour is very humble, and their robes are extremely coarse: besides the fast during the month of Ramazan, they keep a weekly fast on every Thursday. It is part of their religious practices to turn round with great velocity to the sound of a pipe, and when the music ceases to stop at once, without showing symptoms of giddiness. They may leave their order, and are then released from their vow of chastity, and permitted to marry. Some amuse the common people by tricks of legerdemain, or apply themselves to the practice of sorcery and conjurations. They are notorious for their fondness of intoxicating liquors and of opium. They have convents in nearly all Mohammedan countries, which serve the travelling pilgrims of this order as inns. The order of the Rufâ'îs, founded A. D. 1182, by Sheikh Ahmed Rufâ'î, is distinguished by the strange excesses of self-mortification to which its members are carried by their fanaticism. In their weekly assemblies in the hall of their convents, some are always selected to hold a red hot piece of iron between their teeth till it becomes cool, while the others make deep incisions in their bodies with sharp-edged instruments. Another class of Derwishes is that of the *Calenders*. They are distinguished by the singularity of their dress, which is sometimes made of party-coloured cloth, and sometimes consists of a tiger's or sheep's hide, or is made of iron. Frequently the Calenders go about half naked, with their skin painted red or black. They wear feathers in their ears, and have their heads covered with hats or turbans of a fanciful shape. They generally carry in their hands a stick or a hatchet, or sometimes a drawn sword. In their girdles they carry a plate or bowl, which they hold out to receive charities. They often visit coffee-houses and other places of public resort to preach, and act as if they were inspired. In their religious opinions the greatest variety prevails. The Derwishes do not seem to be much respected by the public: they are considered as hypocrites, who have assumed a sanctimonious appearance in order to have a pretext for idleness, and who clandestinely indulge in the grossest licentiousness. All Derwishes, with the exception of the Maulavîs, are allowed to marry; but they are obliged to sleep one or two nights in the convent of their order. (Chardin's *Travels*, ed. Amsterdam, 1735, 4to., vol. ii., pp. 269-97; Paul Rycaut, *The present state of the Ottoman Empire, &c.*, London, 1668, fol., p. 135 et seq.; D'Herbelot, *Bibl. Cr.*, art. Derviche and Fakir; Mouradgea d'Ohsson, *Tableau de l'Empire Ottoman.*)

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* In the 14th vol. of the Linnæan Transactions, page 586, will be found a notice of the occurrence of several specimens of this insect, and also of another beetle (*Necrobia violacea*) in the Egyptian mummy; and in the Transactions of the Entomological Society (vol. I. 'Journal of Proceedings,' page 11) the Rev. F. W. Hope describes several species of Coleopterous insects which had been found in the heads of Egyptian mummies. They are as follows:—*Necrobia Mumiarium, Dermestes pollinctus, Dermestes Roei, and Dermestes elongatus*:—accompanying these insects there were also found some fragments of a species of Pimelia—probably the *P. spinulosa*.

† A figure of this larva will be found in the 'Entomological Magazine,' vol. ii., plate 10.

DERZHAVIN, GABRIEL ROMANOVITCH, the most distinguished lyric poet Russia has yet produced, being acknowledged superior to Lomonosov himself, was born at Kasan, July 3, 1743. After completing his education in the Gymnasium of that city, he commenced the usual military career, 1760, by entering the engineer service, in which the attention he gave to his mathematical studies soon obtained for him promotion. He did not, however, rise to the grade of lieutenant until 1774, when he was sent with his corps to reduce the rebel Pugachev, on which occasion he displayed much bravery and address. He continued to advance in military promotion; but quitted the service, on being appointed a counsellor of state, in 1784, and afterwards governor of Olonetz and of Tambov successively. In 1791, Catherine bestowed on him the office of secretary of state; in 1793 he was called to the senate, and the following year was made president of the college of commerce. Various other appointments followed, the last of which was that of minister of justice, in 1802; from which he retired the following year, on a full pay pension. This he lived to enjoy for a considerable period, as he did not die until 1816, three days after he had entered his 74th year.

Such a career, both military and official, by no means an unusual one with the literary men of Russia, however uncongenial it may appear to us, did not prevent his cultivating the Muses during some of the most busy portion of it; for the finest of his odes were produced at that period. Pre-eminent among these, and perhaps unrivalled by any similar composition in any other language, is his 'Oda Bog' or Address to the Deity,' a piece full of sublimity both as regards the ideas and expressions. Indeed, elevation of conception and nobleness of sentiment, no less than great energy and mastery of language, are striking characteristics of Derzhavin's poetry; and if occasionally more negligent then Lomonosov, it is because he is borne away by the intensity of his feelings. On the other hand, he manifests greater freshness, originality, and richness than his predecessor; and while he enchants by the eloquence of his lyre, he elevates and purifies the soul by the moral grandeur of his strains. In the art of which he was so profound a master, he has shown himself no less able as a theorist and critic by his treatise on Lyric Poetry, printed in the 'Tchenie v Besedæ,' a miscellany edited by a society for the cultivation of the Russian language. Besides the essay just mentioned, he wrote some other works in prose, among which is a 'Topographical Description of the Government of Tambov.' A collection of his works was first printed in 1810, in four volumes; to which was added another, shortly before his death.

DESAGUADERO. [BOLIVIA, vol. v., p. 85.]

DESAGULIERS, JOHN THEOPHILUS, D.D. was brought to England while an infant by his father the Rev. John Desaguliers, a French Protestant refugee, after the Revocation of the Edict of Nantes. He was born at Rochelle, on the 12th of March, 1683.

His early education he owed to the instructions of his father, who appears to have been a very respectable scholar and sound divine, and at an early age he was sent to Christ Church, Oxford. In 1702, being then only nineteen, he succeeded Dr. Keil in reading lectures on Experimental Philosophy at Hart Hall; and he ever afterwards prosecuted his physical researches with great earnestness and success. Upon his marriage in 1712, he settled in London, where he was the first that introduced the reading of lectures to the public on natural and experimental philosophy. This he did with great and continued reputation to the end of his life, which terminated in 1749, in the sixty-sixth year of his age. The highest personages were attracted by the novelty of this mode of teaching; and he was several times honoured with reading his lectures before the king and royal family.

In 1714 Desaguliers was elected a Fellow of the Royal Society, of which he proved a valuable member. The duke of Chandos appointed him his chaplain, and presented him with the living of Edgware, near his seat at Cannons; and he was afterwards made chaplain to the prince of Wales.

From some causes which are not well understood, Desaguliers appears to have fallen into a state of great destitution;—we say appears, for the authority on which the assertion rests has, so far as we know, neither received collateral proof nor denial. He certainly did remove to lodgings over the Piazza in Covent Garden, in which he continued his lectures; but the lines of the poet Cawthorn are the only authority on which the statement of extreme indigence rests:—

> Here poor neglected Desaguliers fell!
> How he who taught two gracious kings to view
> All Boyle ennobled, and all Bacon knew,
> Died in a cell, without a friend to save,
> Without a guinea, and without a grave!

If this statement be true, he must either have been the dupe of others to a great extent, or singularly improvident in his own affairs; as besides his emoluments from his lecturing, he held two church livings.

Desaguliers left a family. One of his sons was an officer in the royal artillery, being Colonel of one of four battalions of which that regiment was composed. Colonel Desaguliers, who was a great favourite with George the Third, died in 1775; and if any of his descendants be living, they may possibly be able to clear up this otherwise inexplicable circumstance.

The separate writings of Desaguliers contain an elegant exposition of the more popular portions of experimental philosophy. His mind was more fitted for the popular and the practical than for the profounder inquiries into those branches of science; and for the geometrical method of investigation than for the higher and then new calculus which has since so completely changed the whole current of research. His works are—

1. A Course of Lectures on Experimental Philosophy, 2 vols. 4to. 1734.

2. An Edition of Dr. David Gregory's Elements of Catoptrics and Dioptrics, with an Appendix on Reflecting Telescopes, 8vo. 1735.

This Appendix contains some original letters between Sir

Isaac Newton and Mr. James Gregory relative to these telescopes, which are worthy of attention.

3. A Translation of the curious, valuable, and little known Treatise on Perspective, by S'Gravesande, 8vo.

4. A Translation of S'Gravesande's Natural Philosophy, 2 vols. 4to. 1747.

5. A Translation of Nieuwentyt's Religious Philosopher, 3 vols. 8vo.

Several respectable papers by Desaguliers are inserted in the Philosophical Transactions from 1714 to 1743.

DESCANT, in music—(the etymology is very doubtful)—signifies, in strict language, a melody or air, extemporized on a *canto-fermo* [PLAIN CHANT], or, in other words, an enlarging *all'improvviso, i. e.* unpremeditatedly, on a given subject, which subject, sung by another voice, or other voices, forms the accompaniment of the descant. Thus the term was understood in the eleventh and twelfth centuries, both by Franchinus and John de Muris; but afterwards it became synonymous with counterpoint. [COUNTERPOINT.] It has now however fallen into disuse, and is not to be met with, except in dictionaries, in any writer of modern date.

DESCARTES, RENE', was born at La Haye, in Touraine, on the 31st of March, 1596, and died at Stockholm on the 11th of February, 1650, before he had completed his fifty-fourth year.

Descartes was of noble descent, being a younger son of a councillor in the parliament of Rennes. He is one of the many instances of great delicacy of constitution being combined with the highest order of mind. His early education was among the Jesuits, who had, shortly previous, established one of their seminaries or colleges in the neighbourhood of his father's residence at La Flêche; and though Descartes was one of those men who would have educated himself in the absence of all instruction, there can be no doubt that the system adopted in the colleges of the Jesuits was much better calculated to develop the peculiar powers of the students than any other which has ever prevailed in modern Europe.

During his course in the college of La Flêche he contracted a friendship with Marsenne, which continued to the end of the life of that distinguished monk, and this circumstance doubtless tended much to increase the attachment of Descartes to mathematical and metaphysical studies. Algebra was at this time studied by few, and it had acquired but little extent and power as an instrument of investigation; whilst geometry, as it was then cultivated, tended too much to run into a mere deduction of isolated but curious and difficult propositions, without much regard to the general principles upon which their analysis and synthesis depended, or to the nature of the fundamental principles upon which geometrical reasoning was ultimately founded. The comparative novelty of the algebraic methods would give a charm to the study in a mind constituted like that of Descartes; and an examination of its first principles, and the operations of the mind in the actual development of the truths of geometry, would be more likely to arrest his active mind than the mere deduction of curious but necessary consequences. It is easy to conceive that his reading and course of study in the college would be somewhat desultory, and that he often depended more upon his own innate power for going through his exercises than upon the lectures of the professor, or the books which were put into his hands. This character in Descartes was properly appreciated by his friends and tutors. He formed the determination of renouncing all books, and endeavouring to efface from his mind the knowledge which he had been taught, so as to only employ the power which he had gained by the discipline of his college, to investigate the fundamental principles of human knowledge *ab initio*. Still this can hardly be thought to be a suddenly-formed resolution. Even allowing this to have been a plan gradually formed, the execution of it was a Herculean task; nor was it unattended with personal danger, as the contemporary history of Galileo sufficiently proves. Considering therefore that Descartes was at this time only nineteen years of age, the whole circumstance is one without a parallel in intellectual history.

Descartes wisely abstained from publishing his views at this time, or indeed his mathematical discoveries, of which there is some probability that he was in possession at this early age; but conformably with the fashion of the age among men of his social and political condition, he engaged in the profession of arms. He served first as a volunteer in the army of Holland, and then in that of the duke of Bavaria; and he was present at the battle of Prague in 1620, in which he conducted himself with great intrepidity. There is no profession more inimical to the study of abstract science than that of arms, and hence Descartes soon abandoned it for the purer and more honourable career to which his previous studies and native ardour of mind were so admirably adapted. But even during his attachment to the camp he did not neglect his mathematical and philosophical inquiries. It is believed to have been during his stay at Breda that Descartes composed his *Compendium Musicæ*, although it was not printed till after his death. Another circumstance indicative of his devotion to geometry is also narrated in connection with the same campaign, and occurring also at Breda. One day, seeing a group of people surrounding a placard, he found it written in Flemish, a language which he did not understand, and therefore applied to one of the bystanders for an explanation. This person chanced to be Beckmann, principal of the college of Dort, who, wondering that a young soldier should take any interest in geometry—the placard being in keeping with the practice of the age, a problem proposed as a challenge—explained the problem to him, but is said to have displayed something of the collegiate pedantry which was then so common. Descartes however promised him a solution, which he sent to the principal early next morning.

The cause of his resigning his commission is said to have been disgust at the atrocities which he witnessed in Hungary: but it is more likely that his object was to see the world under a different aspect, which his travelling as a private individual would enable him to do. He visited in succession Holland, France, Italy, and Switzerland, and stayed some time in Venice and Rome. It has often created surprise, that while in Italy he did not visit Galileo; and the cause which has been usually assigned was his jealousy of the fame of that father of physics, an assumption which there is reason to fear is too well founded. His repulsive conduct towards Fermat, whose overtures of an amicable correspondence he so long rejected with an appearance of disdain, seems also to intimate the wish of Descartes to reign alone in the circle of his associates, and in the philosophic world altogether.

After completing his travels, Descartes determined to devote his attention exclusively to philosophical and mathematical inquiries; and his ambition was to renovate the whole circle of the sciences. He sold a portion of his patrimony in France, and retired to Holland, where he imagined he should be more free to follow his inclination without the interruptions to which his celebrity in his own country rendered him perpetually liable. His writings, however, involved him in much controversy; and the vivacity and dogmatism of his temper often led him to treat in a somewhat supercilious manner the greatest men amongst his contemporaries. The personal courage of Descartes was great; and, unlike many valiant writers, he was valiant in the most trying personal dangers.

The fame of Descartes was very great, even in his lifetime: and that not only among the learned, but in the highest circles of society in every part of Europe. When, therefore, the church rose in arms against the heresy of his philosophy, and he was subjected to much persecution and some danger, he accepted the invitation of Christina, queen of Sweden, who offered him an asylum and complete protection from the bigoted hostility of his enemies. He was treated by the queen with the greatest distinction, and was released from the observance of any of the humiliating usages so generally exacted by sovereigns of those times from all whom they admitted into their presence. The queen, however, probably from the love of differing from every one else, chose to pursue her studies with Descartes at five o'clock in the morning; and as his health was always far from robust, and now peculiarly delicate, the rigour of the climate, and the unseasonable hour, which formed such a striking contrast with those to which he had been many years habituated, brought on pulmonary disease, of which he very soon expired, in the fifty-fourth year of his age. The queen wished to inter him with great honour in Sweden; but the French ambassador interposed, and his remains were conveyed for sepulture amongst his countrymen in Paris. Thus fell one of the greatest men of his age, a victim to the absurd caprice of the royal patron under whose auspices he had taken shelter from the persecutions of the church.

Probably there is scarcely a name on record, the bearer of which has given a greater impulse to mathematical and philosophical inquiry than Descartes. As a mathematician he actually published but little; and yet in every subject which he treated he has opened a new field of investigation. The simple application of the notation of indices to algebraical powers has totally new modelled the whole science of algebra. The very simple conception of expressing the fundamental property of curve lines and curve surfaces by equations between the co-ordinates, has led to an almost total supersedence of the geometry of the antients. The view which he proposed of the constitution of equations is contested as to originality; but admitting, as we do, his claims on this head to be open to dispute, the writings and discoveries of Descartes have laid the foundation for such a change in the general character of mathematical science as renders it extremely difficult for those who have not given very great attention to the older writers to follow the course of reasoning which they employed. The claims of Descartes, however, to the originality of his views on the composition of equations and the relation between their roots and their co-efficients, are discussed under the name of his competitor. [Harriott.]

His speculations in physics have often been ridiculed by subsequent writers, and there can be no doubt that they are sufficiently absurd. Still many reasons may be urged in mitigation of that ridicule, and even of the more temperate censure which careful and judicious historians of science have dealt out upon the intellectual character of Descartes. It ought especially to be observed that the theories of all his predecessors were mere empirical conjectures respecting the places and paths of the celestial bodies; they constituted, so to speak, the plane astronomy of those times, in contradistinction to the physical astronomy of ours. Those paths were not deduced as the necessary effect of any given *law of force*, but as the result of some fixed and unalterable system of machinery invisible to us, and directly under either the control of original accident or the original will of God. Innumerable hypotheses of the nature of this machinery had been framed before the time of Descartes; and he, being dissatisfied with all others, adopted that of an ethereal fluid, which was continually revolving round a centre, like the water in a vortex. This was not so unnatural to a philosopher living before the 'Principia' made its appearance as it would be absurd in any one to contend for it now. We have indeed been too much in the habit of measuring the philosophical sanity of Descartes by the knowledge of our own times—a most unjust test to be applied to the intellectual efforts of any man by his successors. We ought rather to look to what he did accomplish under all the difficulties of his position in respect to the then state of science than measure him by the efforts which were attended with no beneficial result. He was, however, the first who brought optical science under the command of mathematics, by the discovery of the law of the refraction of the ordinary ray through diaphanous bodies. He determined the law itself, but not as the result of any law of force. This was a later discovery: but Descartes led the way.

His inquiries in the positive philosophy were distinguished by great acuteness and subtlety; and though his theory has not in a direct form obtained many advocates in this country, it has in reality been the foundation of most of the sects which have since risen in every part of Europe. Differing as these systems do so very widely at first sight, this may be considered a paradoxical assertion. It is nevertheless the fact. For its proofs the reader is referred to the articles Philosophy (Positive), Metaphysics, and Philosophy of the Human Mind.

The works of Descartes have been collected and reprinted three times. The first—

1. Opera Omnia, 1690-1701, 9 vols. 4to. Amst.
2. Opera Omnia, 1713, also 9 vols. 4to. Amst.
3. Opera Omnia, 1724-26, in 13 vols. 12mo. Paris.

DESCENT, in English law (from *discent*, Norman French, and so written in our older law books), may be defined the act of law by which on the death of the owner of an inheritance, without making any disposition thereof, it is cast upon another as an heir. Inheritance is sometimes used in the same sense, though it rather signifies that which is, or may be, inherited, or taken by descent. (Littleton, sect. 9.)

1. The law of inheritance with respect to descents which have taken place since, or shall take place after the 1st of January, 1834, is now regulated by the Act 3 & 4 Wm. IV. c. 106, but some notice of what the law was before that time is necessary; since it is the constant practice, in the investigation of titles to property, to inquire what happened fifty or sixty years ago.

2. The death of the owner of the inheritance is the occasion of the descent of it. In his lifetime, there can be no descent, and therefore no heir, though there may be an 'heir apparent,' or 'heir presumptive;' an heir apparent being he who must be the heir, if he lives till the inheritance descends; an heir presumptive, he who may be forestalled by the birth of a nearer heir.

3. The person who dies must be at his death owner of the inheritance, or no descent of it will then take place.

4. Inheritances, *hereditaments*, things which may be *inherited* or *taken by descent*, are various. The principal of these is the crown, the descent of which differs in one material respect from that of a private inheritance, inasmuch as where there are no sons of the king, an elder daughter takes the whole of the inheritance, in exclusion of the younger sisters. Again, dignities and honours, as baronies and other peerages, are descendible, according to the limitations contained in the patents by which they were created. If created by summons in the first instance, they are called dignities in fee, and are descendible to females. [Barony.] Finally, all the subjects of real property and all annuities, offices, and whatever other things may be 'held in fee,' are 'descendible,' and this whether they are in possession, reversion, remainder, or expectancy. So are all rights and titles to things that may be held in fee, and the expectancy of an heir apparent or presumptive. There are also 'descendible freeholds,' that is, estates created by leases for lives, which, though not estates in fee, may during their continuance be inherited as if they were. It has been already noticed [Chattel] that the large class of things called chattels are not generally the subject of descent, but that some of them are.

5. Upon the death of the owner, the law casts the inheritance upon the heir, without any act done by him, or price paid for his acquisition: in both these respects, the present law of descent differs from the old feudal customs from which it is derived. According to the old feudal customs, upon the death of the tenant of a fee, the lord of whom it was held was entitled to take and retain it till the heir, for whom proclamation was made, appeared, and paid a sum of money called a relief [Relief] as the consideration for his admission into the tenancy; whereupon 'seisin' or possession was given him, and he took the 'oath of fealty' [Fealty], and if the tenancy was by 'knight's service,' 'did homage' [Homage] also to the lord. All this was more like a new donation, than the present quiet succession of an heir. The descent of copyholds, however, is still regulated much in the manner described. The heir was not however formerly, to the same extent as now, subject to the charges and debts of the deceased tenant, in respect of the property descended [Assets]; and he had also an advantage, which is much insisted and commented upon by the old law writers, though its value is not so apparent to us. The descent of an inheritance, of which the rightful owner had been *disseised* or unlawfully dispossessed, prevented him from making an *entry* upon the heir of the disseisor, or bringing an action of ejectment, the right to maintain which is founded upon the right to make an actual entry, and left him only 'a writ of right,' or other real action, for the recovery of his property. One whole chapter of Littleton's *Tenures* is taken up with treating of descents which 'toll' (take away) entries, but a late Act (3 & 4 Wm. IV. c. 27) prevents descents from having any longer this effect. The present law of descents qualifies materially in one respect the title of the heir to the inheritance descended. Though it makes him as completely the owner of it as if he had purchased it, as to right of enjoyment and power of alienation, it does not allow it at his death to descend as if he had purchased it, but, on the contrary, declares that it shall descend as if he had never had it. Such at least is the new law (s. 1, 2 of the Act). The heir of an inheritance must be always the heir of the last 'purchaser' of it, that is, of the last person who acquired the property 'otherwise than by descent, or than by an escheat partition or inclosure, by the effect of which the land shall have become part of, or descendible, in the same manner as other land acquired by descent.' The practical importance of this rule cannot be understood without knowing who the person is who in any case is designated by the law as the 'heir' to another.

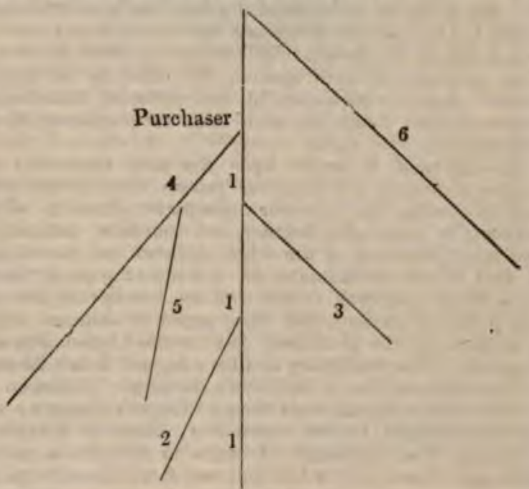
As to descents in fee simple, the fundamental rule is, that any person *of kin* to another, that is, descended from the same ancestor, however distant, may be his heir, but that no person connected with him by marriage or affinity only [AFFINITY], can inherit to him. If the son inherits to the father, his mother cannot succeed to him, for though she may be heir to the son, she cannot be heir to the father, from whom, and not from the son, 'the descent is to be traced.' On the other hand, if the father inherits to the son, the mother may succeed to him, for though she cannot be the heir of the father, she may be the heir of the son. . The fee, fief, or feud, which may thus now descend to the kindred of the purchaser *in infinitum*, was once nothing more than a life interest given to the tenant or holder of it in consideration of the military services to be rendered by the latter to the donor. [ALLODIUM.] The fee was afterwards permitted to descend to the issue of the original grantee, and in process of time to his *collateral* heirs. This was only effected by means of a fiction; for so firmly settled was the notion that 'the blood' (descending) alone of the purchaser or original grantee could be allowed to inherit, that the feudal law was never brought to allow collateral heirs, as such, to be heirs. But when a feud was granted *ut antiquum*, that is, to be held by the donee as if it had descended to him from some remote unknown ancestor, then the law permitted collateral relations however distant, that is, relations descended from any common ancestor, however remote, to inherit. For it was not known how far distant the ancestor was who was supposed to have been the purchaser, nor who he was, and it was sufficient that the heir *might* be a descendant of his. (See for the early history of inheritable fiefs, Robertson's *Charles V.*, Sullivan's *Lectures*, Wright's *Tenures*, Gilbert *on Tenures* by Watkins, Butler's *Coke upon Littleton* 191. a. n. where there is an excellent comparison of the Roman and feudal laws of inheritance.)

While the law however went thus far, it did not, for reasons which some writers have attempted to explain, allow the *lineal ancestors* of the purchaser of the *quasi* ancient feud to inherit it, nor his relations by the half blood, that is, persons descended not from the same father *and* mother as the purchaser, or any lineal ancestor of his, but from one of them only. Still further exclusions followed from the rule which was afterwards established, that the heir of the fee must be the heir of the person last *seised* or possessed of it, as well as a kinsman of the whole blood to the actual purchaser. Among the practical consequences of this rule were the following: that if the child of the actual purchaser inherited to him, and became seised, the purchaser's child by another wife could not succeed, because only half brother to the person last seised; and that if the father's brother inherited to the son and became seised, the mother's brother could not succeed, because only related by marriage to the person last seised. All these exclusions and the fictions of the ancient feuds are done away with by the new act, the effect of which is, as before said, to admit among the heirs of the purchaser all his kindred, both of the whole and the half blood, and notwithstanding any previous descent to any heir of his. This it does by enacting that every lineal ancestor shall be capable of being heir to any of his issue (s. 6); that any person related to the purchaser by the half blood shall be capable of being his heir (s. 9), and that in every case descent shall be traced from the purchaser (s. 2). Still, however, the wife or her relations cannot inherit to the husband, nor the husband or his relations to the wife. But the hardship of these exclusions is at least mitigated by the law of dower and curtesy, which must be read together with the law of descent as one law. It remains to show in what order the kindred of the purchaser inherit. The old law on this subject is reduced by Blackstone to seven rules, which have been generally copied by later writers; but the new act so interferes with them, and they seem, besides, to be so capable of being simplified, that we shall propose instead of them the following rules, which, it is believed, embody the present law on this subject. We shall follow Blackstone's plan of stating the rules in the order in which they may have to be applied in searching for an heir.

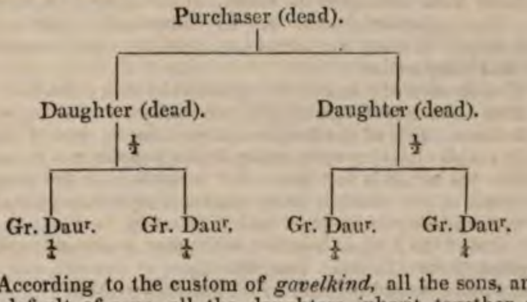
1. The child (if any) of the last owner deceased is the heir of the purchaser. Thus not only is the child of the purchaser his heir upon his death, but if any other heir of the purchaser dies after having inherited, *his* child is the heir of the purchaser.

2. The person through whom another must trace his descent from the purchaser is (if living) the heir before that other person. Now, bearing in mind that descent is always to be traced lineally, that is, either from parent to child, grandchild, &c., or *vice versâ*, it follows that the purchaser's child must, if living, inherit before *his* child the brother before the nephew, the father before the brother or the grandfather, &c. If the purchaser had a child who died in his lifetime, leaving a child, that child is the purchaser's heir, according to rule 1: for the expectancy of the child of being next heir to the purchaser descended upon his death, to his child, as being his next heir, who consequently becomes, upon the purchaser's death, *his* heir It is surprising that this plain and certainly true explanation of the effect in question has been overlooked by all the writers on the law of descents, who lay down a separate rule (the 4th of Blackstone's) to account for it.

According to these rules 1 and 2, the effect of which is very much to simplify the course of descents, when an inheritance has once got into a *line*, it will keep continually descending in that line, till the line ends; and then it will only go back as far as the head of the next line, which springs from the line in which it has been descending, and will descend in that line, and so on; thus:



3. Of persons related to each other, as brothers and sisters, the males inherit before the females: the former successively in order of birth; the latter altogether in equal shares, being therefore called *coparceners*. (This rule is qualified by rule 5.) Hence the sons of the purchaser inherit before the daughters, and first his eldest son, then his second, &c.; then all his daughters together. It makes no difference whether the coparceners are related to each other by the whole or the half blood. This division among females often causes the minute splitting of inheritances, as thus:



According to the custom of *gavelkind*, all the sons, and in default of sons, all the daughters inherit together as coparceners. As to the custom of *Borough English*, see that title.

4. Every male ancestor inherits before any female one. This is qualified by rule 2. (See s. 7 of the new act.) Hence the father takes before the mother, &c., but not the mother's father before her, for he claims through her.

5. Those who are relations by the half blood to the purchaser inherit next after their brothers and sisters, who are relations by the whole blood to the purchaser. (Qualified by rule 4 and 2; see s. 9 of the new act.) What the half blood is has been already explained. Thus (by an

exception to rule 3) the half brother takes after the whole sister, and the half sister does not share with the whole sister. The like is true of half uncles, &c. According to this rule 5, however, the purchaser's brother of the half blood on the part of the *mother* does not take next after his brother of the whole blood, for such half brother claims through, and therefore takes *after* (rule 2) the mother, who (rule 4) is postponed to the father.

6. The mother of the more remote male ancestor inherits before the mother of the less remote; and the mother of any male ancestor before the mother. (See s. 8 of the new act.) Thus the father's mother takes before the mother, and the father's father's mother before the father's mother, &c.

These six rules, read one with another, will, it is believed, point in any case to the heir. It is observable, and in this respect the new differs from the old law, that there cannot be a nearer heir born after the heir who has inherited. Formerly the sister of the purchaser might inherit, and a brother of his be afterwards born, in which case the inheritance *shifted* to the latter. But at present this cannot be, as the father takes before his children (rule 2), and all children in the womb are considered by law as if born. The practical difficulty in finding an heir or proving a title by descent is, not to understand the law, but to ascertain and prove the facts on which the law must operate. (As to this, see Burton's *Compendium of the Law of Real Property.*) The new act provides against the difficulty of tracing descent from the purchaser, by the enactment that the last owner shall be always presumed to be the purchaser till the contrary is proved (s. 2).

To comment at length upon the rules regulating the course of descent is beyond our limits. Some observations and references are however necessary. Rule 3, which makes the eldest son, brother, &c. sole heir, exclusive of the other children, or the other nephews and nieces, &c., is well known by the name of 'the law of primogeniture.' It is almost peculiar to our country, not having been observed by the antients, and being generally abolished where it existed on the Continent and in the United States of America. For the history of this rule, see Hale's *History of the Common Law;* Sullivan's *Lectures;* Robinson *on Gavelkind;* 2 Blackstone's *Com.;* Wright's *Tenures;* and for observations on its expediency, Smith's *Wealth of Nations.* The preference of males to females is not so peculiar. The Jews, Athenians, and Arabians, though not the Romans, gave the inheritance to sons exclusive of daughters. (For the Athenian law of inheritance, see Jones's *Isæus;* for that of the Jews, Selden *de Successionibus apud Hebræos.*) This is not however the case among most foreign nations at present. The preference of the child of the elder son dead in the purchaser's lifetime to the younger son (which we have endeavoured to show is the necessary consequence of rule 1) has some interesting historical associations. The law on this point seems to have been derived from the civil law, and not to have been settled till after most of the other rules of descent. It was still somewhat doubtful when King John kept his nephew Arthur from the throne by disputing it. (See 2 Bl. *Com.;* Sullivan's *Lectures,* lect. 14. In Robertson's *Charles V.,* vol. i., p. 272, there is a curious story of the trial by combat of this point of law.)

The descent of estates tail (regulated by stat. 3 Ed. I., c. 1.) differs from that of fees simple principally in this, that only the descendants of the first donee can inherit; and of these only males claiming exclusively through males can be heirs when the estate is in 'tail male:' when it is in tail female (a mode of gift which is quite obsolete), only females claiming exclusively through females. [Entail.] The limited descent of the estates, together with other qualities of them, makes them the best representatives at present existing (excepting indeed copyholds) of the antient fiefs.

(On the law of descent, as it existed before the late act, see Sir Matthew Hale's *History of the Common Law,* chap. xi.; 2 Bl. *Com.,* chap. xiv.; Cruise's *Digest,* vol. iii. Watkins *on Descents* principally treats of curious points, many of which have ceased to be important. As to the reasons for the new alterations, see *First Report, Real Property Commissioners.*)

DESCENT OF BODIES. [Fall of Bodies.]

DESERTER, an officer or soldier who, either in time of peace or war, abandons the regiment, battalion or corps to which he belongs, without having obtained leave, and with the intention not to return.

As the last-mentioned circumstance distinguishes the crime of desertion from the less grave offence of being absent without leave, it becomes necessary, before the conviction of the offender, that evidence should be apparent of such intention. This evidence may be obtained generally from the circumstances under which the deserter is apprehended; for example, he may have been found in a carriage or vessel proceeding to a place so distant as to preclude the possibility of a return to his corps in a reasonable time; or letters may have been found in which an intention to desert is expressed; or some offer may have been made by him of enlisting in another corps, or of entering into some other branch of the service.

The civil courts of law, in this country, have ever had authority to try offenders accused of desertion; but they have long since ceased to exercise such authority, and they now interfere only in the rare case of an appeal from the decision of the court-martial which is held for the purpose of investigating the charge and awarding the punishment. The latter courts are permitted the exercise, to a certain extent, of a discretionary power in proportioning the punishments to the degrees of criminality in the accused; and this power is generally considered as more likely to promote the ends of justice than the inflexibility of the law in civil courts, where, since no middle course can be taken between condemnation and acquittal, the criminal frequently escapes through the compassion of the jury, when the punishment which by law must follow a verdict of guilty appears disproportionate to the crime. The leniency which has invariably characterised the decrees of courts-martial, and the custom of not awarding the punishment in its full extent till after a repetition of the crime, sufficiently justifies the confidence reposed in those courts.

The practice of deserting from one regiment or corps, and of enlisting in another, either from caprice or for the sake of a bounty, having been very frequent, a particular clause has been inserted in the Articles of War, in order to prevent this abuse. It declares that any non-commissioned officer or soldier so acting shall be considered as a deserter, and punished accordingly; and that any officer who knowingly enlists such offender shall be cashiered. It is also declared, that if any soldier, having committed an offence against military discipline, shall desert to another corps, he may be tried in the latter corps, and punished for such offence; and his desertion may be stated before the court as an aggravation of his guilt. Any officer or soldier who may advise or encourage another to desert is also punishable by a general court-martial.

Absconding from a recruiting party within four days after having received the enlisting money is also considered as desertion. And an apprentice who enlists, representing himself as free, if he afterwards quits the corps, is esteemed a deserter unless he deliver himself up at the expiration of his apprenticeship. Vagrants also, who, pretending to be deserters, give themselves up as such with a view of obtaining money or provisions, are, by a clause of the Mutiny Act, to be considered as soldiers whether enlisted or not.

A non-commissioned officer or soldier who simply absents himself from his corps without leave is exonerated from the graver part of the charge, if any circumstances can be adduced from which it may be inferred that the absence was intended to be but for a short time. Such circumstances are,—goods of value being left behind,—the occupation in which the absentee is found to be engaged being in its nature temporary,—an intention of returning having been expressed,—or again, the offender suffering himself to be brought back without resistance. Simple absence without leave is referred to regimental courts-martial, merely, and these award the punishment discretionally.

The Mutiny Act authorises general courts-martial to condemn a culprit to death, should his crime be found to deserve the extreme punishment; in other cases they may sentence him to be transported as a felon, either for life or for a term of years, or to serve in the ranks for life, or for a length of time exceeding that for which he had originally engaged to serve. In some cases, also, corporal punishment is awarded, and an offender may be sentenced to lose the increased pay or the pension to which he would have been entitled if the guilt had not been incurred.

The crime of desertion is justly considered as one of the greatest that can be committed by any man who has adopted the profession of arms. The officer or soldier who has undertaken to assist in the defence of his country, and steals away from the duties he is called upon to perform, violates a sacred engagement, and shows himself insensible to the dictates of honour, patriotism, and morality. Whether he withdraw through caprice, or to escape the privations to which the soldier is occasionally exposed, he sets an example of discipline infringed, he deprives the army of his services at a time perhaps when he can with difficulty be replaced; and while he basely seeks his own ease, he throws an additional burthen upon his companions in arms. If he pass over to the enemy, he becomes the vilest of traitors; and, should he escape the retribution which awaits him from his injured country, he must submit to live dishonoured, an exile from its bosom.

DESERTS. This word is of very vague signification; it is used generally to designate an uninhabited place, a solitude, and in this sense is equally applicable to the fertile plains watered by the Marañon and the sandy wastes of Libya. It is, however, more exclusively appropriated to sandy and stony plains.

Whatever may be the origin of sand, whether it be the detritus of sandstone rocks or other quartzose masses, or to whatever causes it be due, we consider it is of great importance to man by reason of the fertility which its admixture with clayey soils procures, and by the innumerable uses to which it is applied in the arts.

In considering, however, the vast seas of sand which cover such an amazing proportion of the earth's surface, we are tempted to believe that there is too much of it, and that it had been better if in its stead were rich meadows and arable land; but since deserts exist, we must remain persuaded that they are necessary to the general economy of the globe.

Deserts of sand are much more abundant in the old than in the new world. Almost every plain, even the best cultivated in Europe, contains patches of sand of greater or less extent; but to confine ourselves to *deserts*, properly so called, let us consider the immense surface which they occupy on the antient continent.

Africa, from its western coast, between the Senegal river on the south and Marocco on the north, to the border of the Red Sea, presents one vast sea of sand, occupying upon an average about 48 degrees of longitude and 10 of latitude, which is but partially interrupted by a projecting part of Fezzan and by the narrow valley of the Nile. This steril region is divided into two unequal parts; the more considerable, that to the west, being called the Sahara, or Great Desert, and the other, to the eastward, sometimes bearing the name of the Libyan Desert. Both the one and the other inclose a few small fertile spots called *Oases*, which rise in the midst of the sands like islands in the ocean. They serve as resting-places to the merchants, who, by means of camels, poetically termed the ships of the desert, traverse these dismal regions.

The Desert of Sahara is represented to us as covered with moving sands formed into ridges like the waves of the sea. In the midst of these sands, whose position and aspect are continually changing by the effect of the wind, are dispersed a few rocky hills, and small hollows where the collected waters nourish a few shrubs, ferns, and grasses. The mountains which bound the desert on the west present insulated pinnacles, descending gradually into a plain covered with white and sharp siliceous stones, and which is at last confounded with the sands. At Tegazza, and some other places, a gem salt, whiter than the whitest marble, extends in vast beds beneath a stratum of rock.

'During the greater part of the year,' says Malte Brun, the dry and heated air presents the aspect of a red vapour; the horizon seems beaming with the fires of innumerable volcanoes. The rains, which fall from July till October, do not extend their uncertain and momentary benefits to all parts alike. An aromatic herb resembling thyme, the plant which bears the Sahara berry, acacias, and other thorny shrubs, nettles, and briars; such is the only vegetation which is met with on a few spots in the desert: rarely is a grove of date trees or of other palms to be seen. A few monkeys, a few antelopes, content themselves with what little food they can find. The ostrich also inhabits this region in numerous flocks, feeding upon lizards and snails and a few coarse herbs. Lions, panthers, and serpents, often of a monstrous size, add to the horror of these dreadful solitudes. The desert presents no traces of a beaten path, and the caravans that traverse it, directing their way by the polar star, describe a tortuous road in order to profit by the oases, described as brilliant with vegetation, but which probably owe a great part of their reputation to the contrast they form with the absolute barrenness of the desert.'

Such is the dryness of the terrible burning wind named Samoom, Samum, or more properly *Samiel*, that it frequently absorbs the water contained in the skins borne by the camels for the use of the merchants and drivers. A last cruise of water has been sold for ten thousand drachmas of gold. In 1805, an akkabah or caravan, composed of 2000 persons and 1800 camels, not having found water in the usual halting places, they all, men and animals, perished of thirst. It is in the desert that is seen most particularly that singular optical illusion termed the *Mirage*.

Desert of the North-East and East of Africa.—The great sandy region, as we have said, is contracted in one place by the country of Fezzan. To the east and south of this are deserts occupied by the Tibboos, a nation of Berbers; whilst on the north-east the desert of Barca, the antient Cyrenaica, extends as far as the Mediterranean: both these are continued on the eastern side by the great desert of Libya, which borders on Egypt, forming its western boundary. These deserts differ little in character from the Sahara. To the south, the Libyan desert joins the equally steril region of northern Nubia; leaving which, and crossing the Nile, we again meet with sandy and rocky tracts, which, from Abyssinia on the south as far as Suez on the north, occupy the whole space between the river and the Red Sea.

Deserts of Arabia.—Passing from Africa to Arabia, we first meet with the sandy hills which form the isthmus of Suez, and separate the Arabian gulf from the Mediterranean, whose coast-line they follow as far as Palestine. Immediately to the south of these sands extends the stony and barren tract known by the name of Arabia Petræa. Mount Sinai, an imposing mass of granite, is there surrounded by rocks of inferior height, composed in part of sandstone, and inclosing a few fertile valleys producing grapes, pears, and other excellent fruits; but the country in general is of frightful sterility, presenting nothing but a few shrubs of Egyptian thorn (*acacia vera*), which furnishes the gum arabic, with capers, and a few other plants, intermixed with rocks of a blackish granite, of jasper, and of sienite, and plains covered with sand, flints, and rolled stones. There are however large herds of gazelles and other game.

On the south, as far as Hadramaut, and bounded on the east by the Euphrates and Persian Gulf, and on the west by Hejaz and Yemen, extend the vast deserts of Nejd and Ahkaff, which produce nothing but a few saline plants, and their general appearance differs little from the deserts of Africa, unless it be that they contain many hilly oases adorned with palms and date trees.

Continuing our route towards the Euphrates, we leave on our left that part of the Arabian desert which bears particularly the name of the Desert of Syria, which extends northward as far as Haleb, and in the middle of which the traveller discovers the extensive and solitary ruins of Palmyra, the once magnificent residence of Zenobia.

Desert of Mesopotamia.—Having crossed the Euphrates, we find ourselves in the antient Mesopotamia, so called from two Greek words signifying *between the rivers*, i. e., the Euphrates and the Tigris, and which, in the most extended sense of the name, includes Aljezireh on the north, and Irak-Arabia or Babylonia on the south.

With the exception of narrow slips along the two rivers just mentioned, Mesopotamia is a desert still more horrible than those of Africa and Arabia, of which it may be regarded as the continuation. It is covered with burning sands and steril gypsum. Wormwood and certain aromatic shrubs are the only vegetation, which, covering immense spaces, banish all other plants. The waters of this desert, mostly all saline or sulphurous, give rise to pestilential miasmata, which remain suspended over the desert till, the equilibrium of the air being disturbed, there is formed that pestiferous wind so justly dreaded in Syria and the neighbourhood, and which suffocates any one who has temerity enough to expose himself to its influence.

This desert, occupied by Arabs living upon plunder, is traversed by the caravans which carry on the commerce between Haleb and Bagdad. Its southern portion, or Irak-Arabia, presents, by reason of the proximity of the two rivers, an aspect quite different from that of Aljezireh. That portion of the plain which forms the antient Babylonia is covered with alluvium, and, like the delta of Egypt, is periodically inundated. It is an immense meadow, requiring only the hand of industry to be covered as heretofore with abundant harvests, and to become once more the garden of Asia.

Deserts of Persia.—Scarcely have we left behind us these dismal regions, still directing our course eastward, and near the 34th parallel of N. lat., when we meet with the mountains of Kurdistan, covered with forests, and intersected by fruitful valleys.

Having scaled this wall, which forms the eastern boundary of the basin of the Tigris and Euphrates, we find ourselves on the high table-land of Persia, where we again meet with extensive deserts, some of them sandy, such as we have already seen, but more generally of an argillaceous soil; and thus it is that the Persian deserts seem to form the transition between those of Africa and Arabia and the Tartarian *steppes*.

In Persia there are five principal deserts, which occupy about three-tenths of the surface of the country. Of these the first is the great salt desert, which separates Irak-Ajemi from Khorassan, and is about 130 leagues long and 70 wide. On the south it joins the desert of Carmania; on the east it unites to the province of Khorassan. Its soil is a stiff clay, whose surface is covered with a saline efflorescence in some places an inch thick; and its vegetation, as in all the high plains of the country, consists of saline plants, such as the *Statice Tartarica*, intermingled with a few patches of pasture. The three other deserts are those of Kiab, of Meckran, and of Karakoum. The desert of Meckran is in Beloochistan. It is bounded on the south by the sea of Oman, and is separated from the desert of Sinde in Hindostan by the Brahouic mountains and the Indus. It does not belong to the table-land of Persia, but to the basin of the sea, of which it forms the northern boundary, or coast line followed by a part of the army of Alexander the Great on its return from India. Its productions differ from those of the Great Desert, and consist of the Indian palm, and the aromatic shrubs of Arabia Felix. The desert of Karakoum is to the north of Khorassan; it is sandy.

Deserts of Grand Tartary.—Descending the Paropamisian mountains which bound Khorassan on the north, and form in that direction the escarpment of the great highland of Persia, of which the sandy province of Kohistan seems to form the ridge, we enter upon the deserts of Independent Tartary. This country is bounded on the south by the Paropamisus already named, and by the lofty chain of the Hindoo Koosh, of which it seems to be the continuation; on the east by the high mountains [Bolor Tagh] which separate it from China; on the north by some ridges which, on the one hand descend from the great Altaic chain; and on the other from the extremity of the Ouralian mountains; and on the west by the Caspian. It may be regarded as the north-western declivity of the great central plateau of Asia. It occupies a surface of about 60,000 square leagues, of which the greater half is a desert; for, with the exception of the immediate foot of the mountains and the water-courses, the whole country is condemned to drought and sterility. The saline and sandy plains extend even round the northern part of the Caspian as far as the Don, and, to the east of the Oural, join the steppe of Isim, claimed by Russia.

The country of Khowarezme or Karissum on the south of Lake Aral is now reduced, by causes among which the invasion of the sands is perhaps the most powerful, to the little district of Khiva, which rises like an oasis in the desert, and which a man may ride round in three days.

The Greater Bucharia, or Bokhara, is also surrounded by sands to the north and west. The whole of Independent Tartary at the present time perhaps hardly contains a population of five millions,—a proof of the extreme sterility of the soil.

On the south-east of the province of Kohistan, of which we have spoken, is situated Segestan, and the country of the Afghans.

Desert of Afghanistan.—Afghanistan is an extensive country, containing the city of Candahar. It is a vast sandy basin, except in the immediate vicinity of the mountains by which it is bounded on the east and north, and along the banks of the rivers Lhorah and Helmend or Hindamend, which latter traverses it from east to west, and terminates in the Lake Zorah. The land rises on the north-east towards the lofty mountains which sustain the great central plateau of Asia, and from which descend the Indus towards the south-west, and the Ganges to the south-east.

The vast extent of arid deserts which we have just described, scarcely interrupted by the Indus itself, reaches to the very banks of the Hesydrus, the most eastern of the rivers of the Penjab.

From Cape Bojador on the Atlantic to beyond the Indus, the sandy region extends in a curved line of 1400 geographical miles, and, setting aside the fertile oases, is estimated by Humboldt as covering a surface of 300,000 square leagues; and yet, however extensive this tract, which seems condemned to eternal sterility, we have still to consider the great central table-land of Asia, not less arid than what we have just seen.

Deserts of the Great Central Plateau of Asia.—The first country we meet with as we go eastward is Little Bucharia, bounded on the north by the mountain chain of Alak, which separates it from Songaria, and on the south by the Moos Tagh and Great Tibet. On the east it joins Mongolia.

Little Bucharia is tolerably fertile near the mountains, whence descend innumerable streams, which uniting in the river Yarkand, flow with it into the Lake Lop, having no issue. The whole of the centre and eastern portion of the country is a sandy and salt desert.

Leaving on the north Songaria, which also contains immense arid spots, and whence the river Irtish takes its rise, still continuing our route towards the east, we find the steril plain extending towards Mongolia, where it opens out to form the vast desert of Shamo, which extends to the Great Wall of China through a length of 500 leagues, rarely interspersed with a few fertile spots.

From the outer slopes of those mountains which inclose and sustain the central plateau, the highest in the world, descend those mighty rivers which, on the one hand, fertilise the great empire of China, and pour the tribute of their waters into the Pacific, and on the other, traverse the widely-extended *steppes* of Siberia to disembogue into the frozen ocean.

As for the area of the sandy deserts of the Tartarian table-land, it may on a very moderate computation be estimated at 100,000 square leagues, which, together with the former 300,000 for the African, Arabian, and Persian deserts, and about 100,000 more for the widely-spread sandy and barren tracts in the south of Africa, and sandy patches of Europe, gives a grand total of half a million of square leagues of desert in the old world alone; that is, a surface equal to the whole of Europe, or forty-four times the extent of Great Britain, and this without including the boundless *steppes* of Siberia, nor the marshy plains of northern Asia bordering on the icy sea.

The deserts of America being of a different character, and known by other names, as Pampas, Savannahs, &c, are described under their proper heads.

DESHOULIE'RES, ANTOINETTE DU LIGIER DE LA GARDE, a French poetess, born of distinguished parents in 1633. Great pains were taken with her education: she learned the Latin, Italian, and Spanish languages, and studied poetry under the poet Hesnaut, who often assisted her in her juvenile compositions, and polished her verses when defective. Her life was rather a romantic one. In 1651 she married the Seigneur Deshoulières, a lieutenant-colonel in the service of the Prince of Condé. She visited the court of Brussels in company with her husband, where she rendered herself suspected by the government, which caused her to be arrested and imprisoned at Vilvorde, near Brussels. Here she passed her time in reading the Bible and the works of the Fathers, until, after eight months, she found means to escape, with the assistance of her husband. They were shortly afterwards introduced to Louis XIV., and Mad. Deshoulières was soon esteemed one of the literary ornaments of the age. Not only did she write a variety of poems herself, but she was an object of adoration to the contemporary poets, who honoured her with the title of the tenth muse. Racine and Pradon having each written a tragedy on the subject of Phædra, Mad. Deshoulières brought upon herself some discredit by taking the part of the latter against the former, in ridicule of whom she composed a satirical poem. Racine, however, soon had his revenge, for Mad. Deshoulières brought out a tragedy which met with nothing but ridicule, and afforded him an opportunity of writing a parody. She wrote several other dramatic pieces, but totally without success. The death of her husband, to whom she was greatly attached, was the occasion of one of her most popular Idyls; indeed her fame rests on her Idyls alone, the rest of her works having fallen into oblivion. She died in 1694, leaving a daughter, who obtained some celebrity as a poetess, and whose works are often bound up with those of her mother.

La Harpe, after saying that the Idyls are the only works of Mad. Deshoulières worth noticing, limits his commendation to three of them. He places her below Segrais, an old French pastoral poet, and justly censures her for treating books, flowers, &c., as if they were living persons. Thus, for instance, she envies a streamlet for bearing fish without pain to itself, and asks it why it murmurs when it is so happy? However, her little poem of *Les Oiseaux*, cited in La Harpe's *Cours de la Littérature*, is written with great lightness and elegance, and fully deserves the commendations bestowed on it by that severe though impartial critic.

DESICCATION is the chemical operation of drying bodies, and is effected in different modes according to the nature of the substance.

One of the simplest cases is that of drying a precipitate which has subsided in the fluid from which it is thrown down: this may be effected after due washing by transferring it to a glass, porcelain, silver, or platinum capsule, the weight of which being previously determined, that of the substance dried is readily found on weighing. Sometimes substances are dried merely by exposing them to the air, in other cases at a temperature regulated according to the nature of the substances, as at 100° or 212°, in warm chambers, or a sand heat, or at a red or white heat.

The desiccation of precipitates upon paper filters is very commonly effected to a certain extent by absorption, or by placing the filter and its contents upon a piece of chalk or upon a brick; the operation being completed either by exposure to the air, or in any of the vessels and at any of the temperatures above named. In many instances desiccation is performed by means of the air-pump, which is useful in those cases where delicate organic bodies, which would be injured even by moderate degrees of heat, require drying. Mr. Leslie's process consists in placing the substance to be dried (or a fluid to be evaporated) under the receiver of an air-pump, over a basin containing sulphuric acid, or some other substance having great affinity for water. The receiver being exhausted, the operation is left to itself. On account of the absence of the air, the moisture is readily vaporized and is quickly absorbed by the sulphuric acid; and the vaporization and absorption continue till the substance is dry.

Desiccation may be carried on at common temperatures without the process of exhaustion above described; thus a basin containing quick-lime with a moist precipitate placed above it, and the whole covered with a jar or receiver, will soon render the precipitate dry. Any deliquescent salt may be substituted in some cases for sulphuric acid or quick-lime, such, for example, as potash, carbonate of potash, and chloride of calcium.

In chemical investigations it is frequently necessary to deprive gaseous bodies of their moisture. The nature of the drying substance employed must depend upon that of the gas to be desiccated: thus ammoniacal gas is absorbed by chloride of calcium, and immediately by sulphuric acid; but potash or carbonate of potash answers well for it: again, chloride of calcium would be decomposed if exposed to sulphurous acid gas and some others; potash would absorb them, and its carbonate would evolve carbonic acid, and also unite with them. In fact care must be taken that the desiccator exert no chemical action upon the substance to be dried.

DESIGN. In the fine arts the word design (from the Italian *disegnare*, to draw) is employed in two very different significations: in the first place it is used merely to signify the act of drawing, or representing in lines, the form of any object; in the next place it expresses that combination of invention and purpose which enables the artist to compose a picture or a group, without reference to the material in which it is executed. The accurate conception of form and beauty is displayed in the most masterly degree in the antient Greek sculptures; and in the invention of appropriate attitudes and perfection of physical form the design of the best Greek sculptors cannot be surpassed.

But of all the existing specimens of art the paintings of the Italian masters display the most consummate excellence in design, especially the Florentine and Roman schools, and among them Raphael's in particular. The conception of the story, and the ruling passion of the moment; the selection of forms appropriate to the dumb actors of the story; the invention of appropriate attitudes, not merely for the single figures, but for whole groups, artfully disposed in such manner as to be adapted at once to the freedom of nature and the intention of the artist to assign to each its position according to its prominence in the story; and the perfect execution of the design, placing before our eyes in a palpable shape the inward thoughts of the painter, combine to render the design of Raphael's works the most perfect in existence. Michel Angelo's power is more apparent in the conception and execution of forms purely physical, and his design is therefore of a more limited and less elevated style. In proof of this, a single figure, a mere life-study for instance, from his unrivalled hand may be contemplated with emotions of admiration and wonder scarcely less than those which we feel when the whole of his greatest work is before us. Raphael designed not merely to overawe the spectator with physical vastness, but to elevate him above the visible world. Human suffering, superhuman inspiration, and divine benignity are subjects within the reach of his pencil. The tortured figure of the chastised Ananias, the terrible power inspired into Peter, the prophetic absorption of the prophet near him, pointing with his finger to the source of that power, bring into the design of that one picture (the Death) the most awful and sublime speculations; and, if it is second to the Transfiguration, it is no less a model of perfection in design.

The student in design may discover the means by which former artists attained their power, by copying and analysing their works, namely, the sculptures of Greece, and the works of the old masters. But he must avoid following the implied advice of Reynolds, to do no better than store his mind with their thoughts, and give them forth second-hand as his own. That the greatest poets and painters have borrowed is no apology for an education which recommends only borrowing: to appropriate with justice and effect the thought of another, the borrower must be at least as great as the original inventor. A figure from Raphael in a poor design is only a mockery and a foil to the poverty of the rest. The legitimate object of study, or that part of study which seeks to shorten the process of education, is to discover the mode which other artists have pursued in disciplining their minds, and eyes, and hands, in order to comprehend and express the nature which they had to portray. In this way the student learns, not to pilfer the works of others, but to turn to the best account his own ability and industry, to produce originals instead of mere copies. The study of the best poets, of histories, and the lives of individuals, of emotions casually displayed in the events of daily life, and in fact everything that helps to teach a knowledge of human nature, and the working of its internal feelings, combined with an accurate knowledge of those external forms which must enter into every composition, will conduce to the development of a power of original design. For technical points no work approaches in utility to the *Treatise on Painting* by Leonardo da Vinci.

DESIGN, ARCHITECTURAL. The scheme, idea, or, as it is more usually termed, the design, whether for an intended building or that of one already erected, is shown by means of a series of diagrams or drawings, which being exact geometrical representations, therefore too technical and formal to satisfy those who look at them as pictures, and likewise in some degree imperfect as separate representations, yet, taken one with another, convey a much more exact and complete notion of the whole, both internally and externally, than can be obtained by any other mode of delineation; because they not only exhibit the actual forms and dimensions as they really exist, and not merely as they appear to the eye according to the situation of the spectator; but reveal the whole anatomy of the fabric, together with many particulars that are concealed from view in the edifice. Such drawings consist of *plan*, *elevation*, and *section*, besides others of *details*, or *parts at large*; and their number will depend either upon the nature of the building, that is, on its being more or less complex, or as it is intended to show it more or less fully.

Although a certain prejudice exists against such drawings, on the score of their being too technical and difficult, they become, when once explained, intelligible enough to any person of common capacity, however ignorant he may be of architecture. To begin with the *plan* (the *plant*, or *plot*, as it is sometimes termed by old writers), as the first in natural order, it being that which must be determined upon before the walls can be raised,—it may no less briefly than clearly be described as the map of the building; consequently, any one who understands geographical or topographical plans of that kind can be at no loss to comprehend the nature of an architectural one; the latter being a far more exact and less arbitrary and conventional representation than the other class. By means of the plan we distinguish most clearly the exact shape and extent of the building as regards the space on which it stands; the thickness of the walls, the internal arrangement, with the forms, number, and areas of the rooms and passages into which it is divided; and the situation and width of the doors, windows, fire-places, staircases, &c.; the solid and raised parts, such as walls, columns, piers, &c., being shaded, and the voids or apertures in the walls, such as doors and windows, being left white. For every story of a building there must be a separate plan, although it is not usual in books of designs to give more than those of the ground-floor and the principal one above it, from which the arrangement and size of the rooms above them may be tolerably well guessed at, unless there should happen to be some uncommon deviation in such respects from those below. Plans may further be distinguished as simple or detailed: the former are mere *floor-plans*, indicating no more than belongs to the floor and walls, while the latter describe, by means of dotted lines on the floor, the projection of cornices, the compartments of ceilings, or the groining and coffering of those which are vaulted or arched; likewise domes and skylights. Or else, instead of expressing what belongs to the ceiling plane, a plan of this kind is made to indicate the pavement of floors, the situation of statues, sideboards, bookcases, and other pieces of furniture, particularly of the beds in sleeping-rooms, the position of which is of material importance. Sometimes, too, plans are given showing the exterior of the roof of the building, with its chimney-stacks, gutters, skylights, dormer-windows, parapets, &c.

Another species of plan is that termed a *block-plan*, namely, a map displaying the general mass of the building, together with its locality, either in regard to other edifices or not, as the case may be; and such plans are an exceedingly useful accompaniment to others, because they serve to make us acquainted not only with the structure itself, but with its situation. From a ground-plan alone, for instance, of St. Paul's, all that could be learnt in respect to the last-mentioned circumstance is, that it is insulated, whereas a block-plan would show the precise form and extent of the surrounding area; how confined and irregular it is, and how far it would be necessary to set back the houses in some places in order to reduce the whole to uniformity. Plans of this kind are, in fact, *special* maps laid down upon a larger scale, and therefore more exact and detailed, although less comprehensive than ordinary ones.

An *elevation* (formerly termed an 'upright,' in Italian *alzata*, in German *aufriss*) may be described as a vertical plan, showing the front or one external face of the building as raised upon the plan; it therefore gives the precise forms and measurements of every part, delineated geometrically according to scale, and not as they appear according to distance or the accidents of perspective, whether depending on the level at which the eye is placed, or as the building happens to be viewed parallelly, or more or less obliquely. When the elevation is a single general plane, as is the case, for example, with the Travellers' Club House, in London, it will not differ very much from a direct front view, the projections being only those of the cornice, the dressings of the windows, &c., which are rendered manifest, and may be measured from their profiles; consequently, an eye unaccustomed to such drawings cannot be puzzled. It is necessary, on the contrary, that a person should understand the principle of geometrical drawing before he can form a correct idea of the subject, and judge what its actual appearance would be, if it consists of several planes or separate elevations placed one by the side of the other, all standing upon the same line, and without their returns or the planes perpendicular to and connecting them together, being shown; because, unless the plan is also seen, the shadows alone serve to indicate what parts project and what recede beyond the general line of the front, and in what degree they do so, the shadows being at an angle of 45°, whereby they are made equal to the projection of the part which occasions them, beyond the plane or surface they are thrown upon. This may be easily exemplified by St. Paul's Cathedral: in a geometrical elevation of the western front, the shadowing informs us (without referring to the plan) that the columns in the centre are at some distance from the wall behind them, yet do not form a projecting portico (or porticoes, one above the other); for that would cast a shadow from itself on the building; but that the parts behind the columns recede inwards. Again, we should perceive the whole of the cupola just as if it were immediately over the front, and *between* the two western towers. The only thing to indicate the contrary is, that the shadows would be less forcible, and a tint would be thrown over it, by way of expressing distance; and although, independently of that, no architect would imagine it to be so placed, yet it would be impossible to determine the precise distance from the front, there being no shadow cast upon it by any other part of the building. Consequently, this would remain to be ascertained, either from the ground-plan or from a lateral elevation of the building, in which the cupola would be shown above the transept. One particular in which elevations differ materially from other drawings and from the appearance of the objects themselves, is, that no distinction is made between curved horizontal lines and straight ones; so that whether the part be a plane or curved surface, can be understood only from the shadowing, unless there happens to be something that assists in denoting curvature of plan. Thus, the mouldings of the base of a column are all straight lines; consequently, without shadow to express rotundity, we could not determine whether they belonged to a flat or round surface, unless the shaft be fluted, in which case the flutes will diminish in width, according to their distance from the centre, as may be seen by referring to the cuts in the article COLUMN, pp. 385 and 386. So likewise, in respect to a tower without either apertures or vertical lines regularly placed, we cannot judge whether it be circular or not; whereas, if there be either, they suffice to show that the surface is curved, although represented only in outline; because the apertures and the spaces between them would become narrower in proportion as they are more distant from the centre, and their *reveals*, or inner surfaces, would appear. Still, without shadow, we should not know whether the surface was convex or concave, except by referring to the plan, or by the nature of the subject, there being no difference between the two as regards outline alone. This will be obvious when it is understood that the elevations of curved surfaces are projected, as it is termed, from their plans, by lines drawn perpendicularly to the geometrical plane of representation, which determine where the vertical lines to be shown in the elevation will fall, and the distances between them; consequently, whether the elevation be projected from a convex or concave plan, the result will be the same. When no curved parts occur in the elevation, the process just described is superfluous, because the measurements may be taken at once from the plan. The same method, however, it should be observed, is employed for polygonal figures as for circular or curved ones. Thus, of an octagon three sides would be shown in elevation: yet, although of the same width, the two diagonal or oblique ones will appear narrower than that seen directly in front; and the same applies to all oblique surfaces, let the angle they are placed at be what it may; and to such likewise as are oblique to the horizon as well as to those which are vertical. Hence a roof terminated by gables or pediments at the ends of the elevation will, as regards outline, be drawn as an upright plane, and the sloping lines of the pediment will appear vertical.

Notwithstanding, however, these circumstances, which are apt to perplex those who are prejudiced against geometrical drawings because they are not satisfactory as 'pictures,' a person at all accustomed to them is so far from being in danger of misconceiving them, that it would require an effort on his part to imagine the objects other than what the drawings are intended to express—to fancy a semicircular projection to be a plane, or the profile of a pediment to be upright.

Nevertheless, although the whole may be perfectly well understood, it is not always that sufficient allowance is made, even by architects themselves, for the great difference which sometimes occurs between an elevation and the building itself; or that the real effect is duly considered beforehand. Recourse is therefore occasionally had to what is termed a *perspective elevation*—a kind of conventional representation, partly geometrical, partly perspective, and combining in some degree the advantage of both modes, although strictly neither of them As in elevations of the usual kind, the building is shown exactly parallel to the picture, with the point of sight precisely in the centre, at the proper height from the ground, and as far as regards the first or principal plane, is treated as any other geometrical drawing; but the parts beyond this plane are thrown into perspective so as to show the sides of projections, the soffit of entablatures, the ceiling and pavement within porticoes, and how much of a dome or other part of the structure, standing back from the front, would be concealed from view, at a given distance. It may be further observed, that elevations, both those of the above description and such as are strictly geometrical, have very frequently a pictorial character given them, not only by colouring as well as by shadowing, but also by the addition of sky and background. Yet it would be better were such accompaniment no more than what is just sufficient to relieve the building, instead of being extended over the whole drawing, and carefully worked up; because it is calculated to seduce the eye, while, by making too great pretensions to the character of a picture, it causes the elevation itself to appear offensively formal and unnatural. In fact, *outline* elevations (which mode is now generally adopted in modern architectural publications, especially foreign ones) are preferable to those which are shadowed, as they exhibit all the forms more distinctly, and admit of being measured with much greater exactness. They do not, indeed, convey any notion of effect; yet that may very well be dispensed with in such drawings, particularly if they be accompanied by perspective views.

We now come to speak of *sections*, which are for the interior what elevations are for the exterior of a building. A section or profile (in French *coupe*, Italian *spaccato*, German *durchschnitt*,) is a plane cutting through the structure on some line of its plan, and showing the thickness of the walls and floors, the heights of the rooms, the forms and profiles of ceilings, whether plain or decorated, flat, coved, or arched; also the exact forms of domes and skylights. In fact it exhibits all the separate elevations of the rooms intersected by such plane, that is, the elevation of that side of them which faces or lies behind the plane of representation. In addition to the particulars just enumerated, we are by this means made acquainted with a variety of others, in regard to which a plan cannot be made to afford any information. The thickness of the walls may be ascertained by the plan as well as by a section; so also might the height of the rooms be expressed in the former by means of figures, as the other dimensions generally are; and the form and size of the windows may be learned from the elevations; still we should not know what are the heights of the doors, how they are panelled and decorated, nor what is the form of the chimney-pieces, &c.; nor be able to judge so well of the general proportions of the apartments. Besides which, sections may be made to show much more than what belongs to the architecture alone, for there are many instances in which furniture, pictures, and other decorations and fittings-up, are introduced; and unless this be done, a section is apt to have a naked appearance, except the architecture itself be particularly interesting and rich. For detailed and filled-up sections it is usual to employ outline, with the walls and floors shaded, the former as more solid being made much darker than the latter. When, on the other hand, the elevations of the rooms themselves are shadowed, the thickness of the intersected walls, &c. are left white, in order to prevent confusion and exhibit the profiles better. It should be observed, too, that in sections of this latter description, it is the practice to throw a shadow from the side walls and ceilings of the rooms, as if it were a model of the building really cut through; thus producing an effect both disagreeable and unnatural, and by no means assisting towards rendering the representation more intelligible. Indeed, indispensable and interesting as they are, sections are a far more conventional mode of drawing than elevations, because they represent a building as it never can be seen at all, except where the front of a house has been taken down for the purpose of rebuilding it, while the floors and partition-walls are left standing; in which case any one may obtain a good idea of the nature of a section, but of one seen in perspective. Besides general sections showing the whole of a building from top to bottom, there are frequently partial ones, showing only the rooms on one floor, or even a single room, when it is desired to show it on a larger scale than could conveniently be done any other way. Or instead of this, recourse is sometimes had to a plan of the room with each of its elevations or sides drawn around it, as if laid down flat on the ground, by which means the whole of the apartment is described; for the ceiling may be represented on the plan itself. Horizontal sections again are occasionally made use of, in order to show more accurately than can be done upon a plan, not only the ceiling and its ornaments, but the soffits of entablatures, of window recesses and door-cases, also the capitals of columns and their projection.

Although not in general use, there are likewise many other modes and combinations which deserve to be pointed out. One of them is that of elevation and section united; that is, one half the drawing shows half the elevation, which, as far as understanding it, fully answers the purpose of an entire one; while the other half shows half the section. Another is that of *sectional perspective view*, which, while it serves the purpose of a section in regard to showing the exact form, profiles, and measurements, on the first plane, intersecting the structure, gives also a picture of its interior just as it would appear in any other drawing of the kind; the only difference being, that in this case the drawing extends beyond the interior, while in other views it is bounded by and confined within it. It is hardly necessary to observe that such a mode is suited only for showing a single space, and not one divided into separate rooms. It is exceedingly well calculated for displaying the interior of a portico, as it admits of the situation of the columns in front being shown by the foreground being made a *perspective plan*.

Besides the usual plans, elevations, and sections, there must likewise be *details* or *parts at large*, answering in some respect to what are termed working drawings; since without these we can judge only of the general design, but not of its minutiæ and finishing, whether belonging to decoration or construction:—and far more may be learned, and that too more satisfactorily, by studying a single good example thoroughly, than by looking at many which are only imperfectly described. It is therefore to be regretted that published designs, unless they happen to be those of actual buildings, are so exceedingly defective in this respect, generally showing no more than a couple of plans with one or two elevations, while, although so very essential, sections are entirely omitted. In order to illustrate a subject properly, not only should there be a plan of every floor and an elevation of every side, but sections, both longitudinal and transverse, and as many of each as the nature of the plan may require.

Having done thus much to show the whole anatomy of the structure, we may then provide perspective views both of the exterior and principal parts of the interior, in order to show the character and effect, which, without such drawings, can be judged of only piecemeal, and inadequately even by those who perfectly understand the others. Yet however satisfactory as a representation, a perspective view of an interior must still leave much to conjecture, as one of the sides or ends of it cannot possibly be shown, while of the others two will be more or less foreshortened, so that if there be deep receding parts in them, they can be but imperfectly seen,—perhaps may be quite misunderstood; or can be well understood only by the aid of plan and section. In many cases, therefore, an interior would require two or even more perspective drawings in order to show it completely. But with every part of the building thus fully made out and described in drawings, the whole may be understood as well, in some respects even better, than by a model of it; for besides that the latter can do very little towards showing the interior—certainly not its effect, there is this drawback attending it, that it conveys no idea of situation or locality, and that, instead of the eye being confined either as to due distance or height, it views it from points from which the building itself can never be seen under any circumstances. Neither has it the accompaniment of sky, background, foreground: a model exhibits the mere building alone—as it is, certainly, yet not as it appears; for it is seldom any attempt is made to give the proper local colouring—at least to do more than merely hint at it. By means of perspective views, on the contrary, provided they be sufficiently numerous and judiciously chosen, and not deceptively embellished with effects of rare occurrence, we may obtain a most accurate idea both of the architecture and of all its local accompaniments and accessories, whether favourable or the contrary. Of *bird's-eye* views of buildings [BIRD'S-EYE] we have said nothing, both because they are now seldom made use of, and because we consider them not only most awkward, disagreeable, and unnatural representations in themselves, but as altogether superfluous, if a building is properly described by the other modes, or even by a block-plan and elevation alone.

DESMAHIS, JOSEPH-FRANÇOIS-EDOUARD DE CORSEMBLEU, was born in the year 1722, at Sully-sur-Loire. His father designed him for the law, but he devoted himself to poetry, and at the age of eighteen came to Paris, where he was well received by Voltaire, and admitted into high society. He distinguished himself by a number of little poems, which enjoyed a considerable reputation in their day, but which, as most of them are suited to particular persons and occasions, and moreover are filled with mythological allusions, have little interest at present. The Greek mythology was put to a peculiar use in the days of Louis XIV. and those of our own Queen Anne; poems were written altogether in the court taste, and yet perpetual references were made to pagan gods. Not the slightest attempt was made to write in the true spirit of the Greeks, as Shelley and other modern poets, who have chosen mythological subjects, have done of late. Hence a variety of little works, which acquired a great reputation during the reign of a certain fashion, have fallen into oblivion on that fashion having passed away. The poems of Desmahis are precisely of this class. He wrote some comedies, of which 'L'Impertinent' was very successful in its day, but attempts to revive it have proved ineffectual, and La Harpe has censured it pretty severely. Desmahis was greatly blamed for the articles 'Fat' and 'Femme' in the 'Encyclopédie.' Instead of writing something that contained information, he only made two satirical essays in the style of Rochefoucauld. He died in 1761.

DESMARAIS. [REGNIER.]

DESMOND, and EARLS OF DESMOND. [CLARE and CORK.]

DESPOTISM. [MONARCHY.]

DESSALINES, JACQUES, a negro from the Gold Coast of Africa, was imported into the French colony of St. Domingo as a slave. Having become free like all his fellow slaves by a decree of the Convention, 4th February, 1794, he soon figured among the foremost in the insurrection of the blacks against the white colonists. He attached himself to the negro chief, Toussaint l'Ouverture, who made him his first lieutenant. His intrepidity, his extreme activity and quickness of movements, distinguished him in the war against the French troops, and particularly against generals Rigaud and Leclerc in 1802. After Toussaint's capture by the French, Dessalines submitted for awhile, and accepted an amnesty, but he was soon after at the head of a new insurrection against general Rochambeau, Leclerc's successor, and contributed greatly to the victory of the blacks at the battle of St. Marc, which decided the evacuation of the island by the French in October, 1803. Dessalines encouraged a general massacre of the whites, without distinction of age or sex. In 1804 he had himself proclaimed emperor of Haiti, under the name of Jacques I., and established his court in imitation of that which Bonaparte had just formed in France. But his cruelty and arbitrary conduct towards his former comrades led to a conspiracy, at the head of which were the negro chief Christophe, and Pethion, a mulatto. They rose upon Dessalines at a review, in October, 1806, and killed him on the spot. Christophe succeeded him as emperor of Haiti, by the name of Henri I.

DESSAU, ANHALT, a Saxon duchy in the north-west of Germany, bounded, where its limits do not touch the other duchies of Anhalt, Bernburg and Cöthen, by the Prussian province of Saxony. It is composed of six detached portions of territory, situated on the banks of the Elbe, Mulde, Fuhne, and Wipper; and they are subdivided into

	Towns.	Market Towns.	Vill.	Houses.	Population.	Chief Town.
1. Dessau Proper.						
Bailiwick of Dessau	1	..	14	1638	13,760	Dessau, 10,930
" Qualendorf	2	..	18	2572	6,220	Radegast, 1130
" Oranienbaum	..	1	26		10,560	Oranienbaum, 2070; Wörlitz, 1910
Town of Raguhn, on an island of the Mulde	1	..	..	200	1,670	
Town of Jessnitz, on the Mulde	1	..	..	340	2,380	
2. Bailiwick of Gröbzig	1	..	10	430	2,930	Gröbzig, 1310
3. " Sandersleben	1	..	7	880	5,250	Sandersleben, 1790
4. " Gross Alsleben	..	1	2	200	1,770	Gross Alsleben, 690
5. " Greater Zerbst 6. " Lesser Zerbst	1	..	24	2180	12,790	Zerbst, 8570
Total	8	2	101	8500	57,210	

The duchy has an area of about 357 square miles: it extends from 11° 30′ to 12° 35′ E. long.; its most southerly point is in 51° 39′, and its most northerly in 52° 7′ N. lat. With the exception of some high ground in the bailiwick of Sandersleben, it presents a uniform and beautiful plain, the surface rising slightly along the banks of the Elbe and Mulde. The character of the soil varies considerably; the districts adjoining the Fuhne and Wipper are highly cultivated, and fertile in grain, vegetables, &c. · the vicinity of the Elbe and Mulde is noted for its rich meadows and pastures; but the soil of Zerbst is poor and hungry, and many parts of Dessau Proper are sandy heaths. In general it may be said that the districts on the left bank of the Elbe are extremely fertile, and on the right bank sandy and unproductive. A fifth part of the surface of Anhalt-Dessau is covered by woods and forests, which occupy about seventy-three square miles, mostly on the left bank of the Elbe, about Wörlitz, Oranienbaum, &c., and from the abundance of game still render the duchy as famed in Germany as in former times.

The chief river is the Elbe, which traverses Anhalt-Dessau from east to west, and divides it into two very unequal parts, of which the larger lies on the left bank: its banks are defended by strong dams, called 'the Elbewall,' for the purpose of checking the inundations which at times devastate the adjacent lands. The Elbe separates Zerbst from the Prussian dominions, and is traversed by a flying-bridge, about three miles north of Dessau. All the streams in the duchy are tributaries of this river, either directly or indirectly; those of any importance which flow directly into it are the Mulde, a navigable stream, well known for its salmon, which comes from the bailiwick of Alsleben, receives the Wipper, and meets the Elbe at Henscheinen above Dessau, and the Ruthe, which enters the duchy from Zerbst. The minor streams, indirectly tributary to the Elbe, are the Taube, Wipper, Fuhne (the only native river of Anhalt-Dessau), and the Ziethe or Zittau, which flows into the Fuhne: the three first uniting their waters with the Saale, a tributary of the Elbe. The duchy is full of 'stillinge,' narrow tracts of successive ponds or pieces of water, which bear evident traces of having been parts of the former beds of rivers; they partially skirt the course both of the Mulde and Elbe. There are a number of lakes also, the largest of which is the Pötnitz, situated between the Mulde and Elbe, and close to their confluence; the high road from Dessau to Oranienbaum passes across it by means of a wooden bridge, resting on stone piers. Lake Schönitz is of considerable length, and connected with Lakes Rehsen, Röttingen, and Döbritz. But the most picturesque is Lake Wörlitz, which is also connected with Lake Röttingen. All these receive their waters from the Elbe, and are supposed by many to have once been portions of an old bed of that river.

The climate of Anhalt-Dessau is temperate and healthy, though the inhabitants suffer at times from fevers and other diseases occasioned by inundations.

The industry of the people, encouraged by the paternal care of the government, who introduced the English system of husbandry in the latter part of the last century, has brought almost every available tract under cultivation, and placed the duchy in a situation to produce more grain than its wants require: and the same remark applies to fruit and vegetables. It grows all the ordinary descriptions of corn, as well as hops, hemp and flax, pulse, succory, madder, tobacco, rape seed (from which about 220 tons of oil are annually obtained). Buckwheat is raised in Zerbst, and yields large crops in wet seasons.

There are no mines in Anhalt-Dessau, nor any quarries, except those of limestone in the bailiwick of Sandersleben; neither has any advantage yet been taken of the beds of salt near Gröbzig and Sandersleben. There are beds of coal near the last-mentioned place, where also gypsum is dug; and at Qualendorf a species of agate is found which, when polished, has the appearance of diamonds. The soil near Zerbst is impregnated with iron, and there are chalybeate springs in this quarter. Here and there potters' clay and porcelain earth are obtained.

Game is so important a product of the duchy that the seignorial revenues derived from boars alone have at times amounted to 6000 rix dollars (about 850*l.*) a year. In 1688 we are told that 215 of these animals, some of them weighing from 4½ to 5½ cwt. each, were taken in one day. During the twenty years' interval, 1810 to 1829, 19,859 red deer and boars, including 2359 of the latter, were caught or killed. The lakes and rivers afford a good supply of fish, among which the salmon of the Mulde is highly esteemed; of this fish the produce for the seven years, 1817—1823, was 3348. Shadfish and sturgeons of large size are caught, and the lamprey is at times plentiful in the Mulde.

The duchy of Anhalt-Dessau, 23 years before the duchy of Zerbst was united to it in 1770, contained 31,909 inhabitants: in 1787 it had increased to 36,093; at the time of the union, in 1793, it was estimated at 38,000, exclusive of upwards of 10,000 for Zerbst; in 1812 the united territory had a population of 53,608, including 13,608 for Zerbst, at least according to Crome's returns. If he be correct, the numbers must have fallen off in the six years succeeding, inasmuch as they did not amount to more than 52,947 at the time of the census in 1818. The subsequent returns in 1830 state the number of houses in the whole duchy to be 8293, and of inhabitants 57,629, of whom 1125 were Roman Catholics and 1614 Jews. The males amounted to 27,471, and the females to 30,158. In the towns there were 4310 houses and 31,492 inhabitants; and in the rural districts 3983 houses and 26,137 inhabitants. Lindner observes that the duchy is more densely peopled than the other two duchies of Anhalt, Bernburg and Cöthen.

The rearing of cattle is an object of much attention in all parts, particularly on the private domains of the duke, which are very extensive, contain between 4000 and 5000 inhabitants, are let in large farms, and raise large crops of clover. The duchy abounds in fine pasture land. The whole stock of horned beasts in 1830 was 14,826, and most of them are of improved breeds. Greater care is taken of the flocks than in almost any other part of Germany, and the whole of those on the ducal dominions have been improved by crossing them with Merinos. Of sheep of all kinds the numbers in 1830 were 85,831. Less attention has been bestowed on the breed of horses, the stock of which in 1830 amounted to 4743. Swine are very generally reared.

The inhabitants being chiefly engaged in agriculture and rearing cattle, comparatively little attention is paid to manufactures. Linen-yarn is spun by the female peasantry in winter, and linens, including damask-cloths, are woven by small manufacturers and under the peasants' roofs, for home consumption only. There are manufactures of woollen cloths in Raguhn and Jessnitz, and on a smaller scale in Dessau, Zerbst, and other towns, whence there is some exportation.

There are tobacco manufactories at Dessau and Zerbst, and in the latter town an earthenware manufactory and wax bleaching grounds, as well as a large manufactory of gold and silver articles. Anhalt-Dessau has oil and paper mills, tile-houses, limekilns, potash and tar works, and tanneries, and manufactures leather, turnery, &c. The manufacturing part of the population, however, did not, in 1830, exceed 2796 masters and 2060 assistants, of whom upwards of one half (2557) were settled in the bailiwicks of Dessau and Zerbst.

The trade of Anhalt-Dessau is chiefly internal. Its external transactions do not amount to more than about 150,000*l.* per annum, imports and exports both inclusive. The exports consist principally of grain, rapeseed-oil, butter, cheese, timber, game, dried fruits, wool and woollens, fish, pork, linen-yarn, tobacco, turnery, and gold and silver wares. The imports consist of drugs and colonial produce, cottons, silks, &c. Dessau and Zerbst are the chief seats of trade.

The duke is uncontrolled sovereign, except with regard to taxation, which is subject to revision by the states-general of the three Anhalt duchies; and the affairs of the country are administered under his immediate direction by a secret cabinet (*geheime-kabinet*), and the revenue-board (*rent-kammer*), the latter of which administers the ducal revenues and domains as well as all matters of police. The supreme tribunals of justice are at Oranienbaum, Qualendorf, and Zerbst, in which last town is a high court of appeal for the three Anhalt duchies and the principalities of Schwarzburg-Rudolstadt and Sondershausen. The revenues (including about 19,000*l.* arising from the duke's isolated domains in Eastern Prussia, Brandenburg, and other parts of the Prussian dominions, of which the whole area is about 189 square miles, and the population about 12,000), are estimated by some at about 65,000*l.*; but Crome is of opinion that they are much underrated at that amount. The public debt is said to be about 92,000*l.* The military, on a war-footing, consist of a battalion each of regulars and militia; and the duke's contingent for the army of the German Confederation is 529 rank and file.

The national religion is the Lutheran; the non-conformists consist of about 1600 Jews and 1100 Roman Catholics. The number of parishes is 53, divided into two general superintendencies at Dessau and Zerbst. There are gymnasia or high schools in Dessau and Zerbst: in the former a seminary for educating teachers, and a Jewish school; and the duchy is so well provided with elementary and other schools that the proportion of children receiving instruction exceeds one in every nine inhabitants. (Lindner's *Hist. and Descript. of Anhalt;* Crome's *Anhalt-Dessau;* Hassel's *Principalities and Freestates of Germany;* Von Stein, Hörschelmann, &c.)

DESSAU, the capital of the duchy of Anhalt-Dessau, is situated on the left bank of the Mulde, about two miles from its junction with the Elbe, in 51° 48′ N. lat., and 12° 18′ E. long., at an elevation of 116 feet above the level of the sea. The town is about half a league in circumference: three sides of it are enclosed by a wall, and the fourth, towards the east, is bounded by the Mulde, which is crossed by a handsome bridge. Dessau has six gates, and is divided into the Altstadt, Neustadt, and the Sand, and three suburbs: it contains seven public squares, and thirty streets, which, upon the whole, are well and regularly built. Dessau may in fact be ranked among the better class of German cities: the Cavalier Street, would be an ornament to any capital, and some of the public buildings are handsome, especially the palace of the dukes of Dessau, which is a noble edifice, and contains some beautiful specimens of the old masters, and collections of works of art, coins, and engravings, among which are many excellent architectural designs; the palace or ducal chapel contains a chef-d'œuvre of Lucas Cranach, 'the Last Supper,' in which he has introduced portraits of Luther, Melancthon, and other contemporary characters. Among the other buildings we may mention the palace of the duchess-dowager, the town-hall, four churches, of which two are of the Reformed Lutheran ritual, one Lutheran, and one Roman Catholic; one synagogue, two hospitals, a poor-house, orphan asylum, infirmary, the Amelia and Wilhelmina foundation for the indigent and infirm; a theatre and musical academy, the fine ducal riding-school, and the public cemetery, which is laid out with great taste, and embellished with an elegant entrance in the Roman style.

Dessau is well supplied with schools of public instruction. The Franz school, for the education of Jews, is known throughout Europe. The gymnasium, or high-school, too, is an admirable institution, both for its system of instruction and the attention bestowed on the pupils. It took its rise from the Philanthropin, which was founded by Duke Francis in 1774, and remodelled in 1785. It is divided into three departments: an upper or classical school, consisting of five classes, which in 1819 had 79 pupils, and in 1830, 116; a citizens (bürger) school of three classes, which in 1819 had 123 pupils, in 1830, 160; and the elementary-school, which is preparatory to the two others, has four classes, and had 217 pupils in 1830. A small library and collection of models is attached to the gymnasium, which is besides in connection with the seminary for school-masters. Another excellent institution is the Louisa school of industry for the spinning of flax and cotton, the profits arising from which are partly divided among the children, and partly deposited in a savings'-bank; there is likewise a society for apprenticing young men to trades. The total number of children receiving instruction in the various public schools in Dessau is estimated at 1750, of whom 1020 are boys.

The population of Dessau in 1818 amounted to 9136, of whom 807 were Jews; in 1830, including the suburbs, it contained 1005 houses and 10,611 inhabitants, of whom 763 were Jews; and in 1836 the population was estimated at 10,900. They have but few manufactures, principally of cloth, stockings, hats, tobacco, vitriol, silver-lace, and beer: the retail trade is almost exclusively in the hands of the Jews. It however carries on a considerable trade in grain, &c., and has a salmon fishery on the Mulde. Dessau has three annual fairs. It is the birth-place of the philosopher Moses Mendelsohn, who died in 1786. In the environs are the ducal villas of Louisium, Georgium, and Vogelheerd, with gardens laid out in the English taste; the Drehberg is the burying-place of the dukes of Anhalt Dessau, which is excavated in an artificial mount, planted with shrubs, and surmounted by a building with a lantern and cupola; and the Stieglitzberg on the Elbe, with the monument to the memory of the duke of Dessau, who fell at the battle of Torgau.

It seems probable that Dessau, like many of the neighbouring towns, was built by the Dutch in the latter half of the twelfth century, under Albrecht the Bear; and though it is not mentioned by any existing records until 1213, it is, with some probability, conjectured that the church of St. Mary is of earlier date, the hospital having been erected some time previous to 1228. The school, which is the oldest in Anhalt, was founded in 1313. [ANHALT.]

DESTOUCHES, PHILIPPE NERICAULT, was born at Tours, in 1680. He much displeased his relations by turning actor, when they had designed him for the law. He wandered from town to town as director of a company of comedians, among whom he was distinguished by his strict morality and his great regard for religion. His first dramatic piece, 'Le Curieux Impertinent,' (founded on the episode of the same name in Don Quixote) was acted in 1710, and received with enthusiastic applause. Three pieces which followed seem to have had more success than they merited. In 1717 Destouches accompanied Cardinal Dubois to England, where he married an English Catholic lady, with whom on his return to France he retired to an estate in the country, where he passed nearly all the remainder of his life. In 1723 he was chosen a member of the Academie. About this time commenced his great reputation as a dramatist, for though his former pieces had been successful, they rose little above mediocity. His 'Philosophe Marié' raised him to a high rank among the comic writers of France, and the envious critiques which were written against it only showed how highly it was valued. 'Le Glorieux,' which followed, was by some critics considered even superior to 'Le Philosophe Marié,' and La Harpe seems to be of this opinion; however the latter is generally considered the most perfect. He continued to write for the stage till his sixtieth year, though the pieces he produced were not equal to the two already mentioned; one of the most favorite was 'La Fausse Agnés,' a farcical comedy resembling Murphy's 'Citizen.' From that time he devoted himself to theology, and wrote several essays against infidelity. He died in 1754.

The 'Philosophe Marié,' on which, as we have seen, the fame of Destouches chiefly rests, is a model in its way. Although the subject and style of the whole are generally serious, there are situations and scenes which can scarcely be excelled for humour. The moral tendency of the piece is such as must give pleasure to a well-constituted mind. There are no hacknied sentiments or mawkish expressions, but the best of feelings are pourtrayed, and exhibited in so attractive a form, that even the bad characters of the piece are overcome by them, and the spectator feels that their conversion is perfectly natural. The very weaknesses which the author has implanted in his virtuous characters show that he knew human nature to be more interesting than a picture of faultless abstractions.

DESVAUXIA'CEÆ, an obscure and little known natural order of plants, consisting of a few New Holland sedge-like herbs, of no known utility. They are nearly related to Restiaceæ and Cyperaceæ, and are principally characterised among other glumose endogens by having several carpels placed in the middle of each flower. The most recent character is the following, given by Endlicher, in his 'Genera Plantarum.'

Dwarf Australian herbs with the appearance of a pigmy Cyperus or Scirpus; the roots fibrous or fasciculated. Culms filiform, undivided, leafless. Leaves radical, between thread-shaped and bristly, sheathing at the base. Spikelets hermaphrodite, in two ranks, one-flowered, or terminal and solitary with one or many florets. Glume single, anterior, or two nearly opposite each other, coarse. Paleæ none, or delicate, single or double, parallel with the glumes. Stamen single, anterior. Filament filiform, simple. Anthers turned inwards, one-celled, attached by the back above the base. Ovary either single and sessile (we would exclude this character) or several attached to a common axis at different heights, imbricated downwards, one-celled. Ovule solitary, suspended from the apex of the ovary, orthotropous, with the foramen regarding the base of the ovary. Styles filiform, simple, united to each other at the base. Stigmas simple, or with a feathery beard. Utricles membranous, dehiscing lengthwise at the side. Seed orthotropous, pendulous; skin leathery and rather hard. Albumen fleshy and abundant. Embryo antitropous, lenticular, applied to the albumen at the extremity of the seed opposite the umbilicus; the radicular extremity papillose, and regarding the base of the fruit. (*Genera Plantarum*, p. 119.)

DETACHMENT, in military affairs, is a certain number of battalions of infantry and squadrons of cavalry which are selected from an army for the purpose of being employed on some particular duty.

The danger of being beaten in detail renders it, generally speaking, improper to have considerable divisions of an army far separated from the main body, but in warfare many circumstances occur which render such a measure adviseable; as, for example, the necessity of keeping possession of certain important positions while the rest of the army is otherwise employed; of masking a fortress, or keeping a body of troops in check, during the temporary advance of the army into the enemy's country; or of protecting the magazines and ensuring the safety of convoys with provisions or stores. In these cases however, great precautions should be taken that the detachment may not be cut off; it should therefore be protected by some fortified place, or its distance from the main body should not be so great as to prevent it from rejoining the latter before it can be attacked by a superior force: good roads should of course exist, or be formed, by which it may retire if compelled.

Detachments, when judiciously disposed on a field of battle, may contribnte much to a victory by turning an enemy's flank while a powerful attack is being made in front; but the greatest foresight and a perfect knowledge of the ground are necessary in order that the operations of the main body and the detachment may take place at the proper times. The king of Prussia (Frederick II.) seems to have been averse from making detachments on the field of battle; and, in his Instructions to his Generals, he observes, that they generally arrive too late or too early at the appointed place, on which account they frustrate the object which was intended by them. He quotes as examples, the defeat of Charles XII., at Pultawa, in consequence of the detachment which he sent out on the preceding evening having lost its way; and the failure of Prince Eugene to surprise Cremona from some such cause. The objection however does not apply when the army is able to make detachments without weakening itself too much, and when the divisions are not separated by local obstacles which might prevent them from succouring each other if required. At the battle of Vittoria, in 1813, the troops under General Graham may be considered as forming a detachment from the principal part of the army commanded by Lord Wellington and Sir Rowland Hill; and, as the communications between the divisions were very difficult from the nature of the country, so that the commanders were obliged to act independently of each other, the circumstances must have been very unfavourable for a unity of action; yet the event justified the measures taken, and the victory there gained completed the deliverance of Spain.

When an officer is detached with a few troops to watch an enemy, he should endeavour to get well acquainted with the ground, in order that he may be enabled to change his position according to circumstances, and he should keep his division concealed as much as possible. He may act offensively if a favourable opportunity should present itself, but, in general, his object is to gain information and keep the enemy on the alert rather than to fight. Men of intelligence should be appointed to such commands, which are frequently attended with considerable difficulty and danger;

but, on that account, the officer has the greater chance of distinguishing himself.

Small detachments are sent out in presence of the army to perform outpost duty, to throw up field-redoubts, repair bridges, roads, &c., or to protect the flanks on a march.

DETERMINATE, a word applied in mathematics to those problems which have one answer only, or at least a certain and finite number of answers. Thus the problem, 'given the base of a triangle, and the sum of the other two sides, to construct the triangle so that its vertex may be on a given straight line,' is determinate; for the number of ways of solving it cannot exceed two. But if we omit the condition that the vertex is to be upon a given straight line, and merely require that a triangle shall be constructed having a given base, and two other sides of a given amount of length, the problem becomes indeterminate, that is, has an infinite number of solutions. The peculiarities of this subject, namely determinate analysis, are not striking: it is to the word INDETERMINATE that we must look for the most characteristic points of distinction.

DETINUE is the form of action prescribed by the English law for the recovery of goods and chattels which have lawfully come into the possession of a defendant either by delivery or finding. It does not lie for real property, but for mere personal chattels, except only deeds and charters. [CHATTELS.] In this action the plaintiff recovers either the thing detained, or if the thing cannot be had, the value of it, with damages for the detention. In order to enforce the redelivery, the court will frequently give very large damages, with liberty to reduce them to a small amount on payment of costs and return of the thing itself. This is the only remedy at law for the recovery of a personal chattel in specie, unless in those cases where they can be recovered by replevin. The action of detinue is similar to the actio depositi of the civil law, and is identically the same in its properties, process, circumstances, and forms as the action of debt, with this difference, that one is for the recovery of a chattel, the other of money. In order to ground an action of detinue, which is only for the detaining, these points are necessary: 1. That the defendant came lawfully into the possession of the goods. 2. That the plaintiff have a property. 3. That the goods themselves be of some value. 4. That they be ascertained in point of identity. As in this action the defendant might formerly wage his law [DEBT], it has of late given place to the action of trover [TROVER], but the wager of law having been abolished by 3 and 4 W. IV.. c. 42, it is probable that the action of detinue will again come into use. (F. N. B.; Fitzherbert, *Natura Brevium*.)

DETMOLD. [LIPPE.]

DETONATION is a chemical term employed to express combination or decomposition which occurs with noise and frequently with combustion. It may take place between bodies in very different states, as between gaseous bodies, a gas and a solid, &c. One of the simplest and most powerful cases of detonation is that which happens when two volumes of hydrogen gas and one volume of oxygen gas are mixed, and fired either by the taper, electricity, the action of spongy platinum or sudden compression; in this case the detonation is loud, and the result of the chemical action is water formed by the union, in the proportions stated, of the gases above mentioned.

The sun's rays falling suddenly on a mixture of hydrogen and chlorine gases cause them to detonate and combine with the formation of hydrochloric acid. A detonating tube for the union of gases is termed a eudiometer. [EUDIOMETER.]

Detonation also occurs when phosphorus, with chlorate of potash or with nitrate of lead, &c., is struck. And there are certain combinations of metallic oxides which detonate or fulminate, by slight friction, by heat, electricity, or sulphuric acid; such are the ammoniuret of silver and gold, fulminate of silver and of mercury. The chloride of azote and the iodide of the same element are very powerful detonating bodies. In some cases, as has been mentioned, the result of detonation is combination, as when oxygen and hydrogen unite to form water, chlorine and hydrogen to form hydrochloric acid, &c. In other cases decomposition occurs and is the result of detonation. Thus ammoniuret of gold is separated into metallic gold, and the ammonia is decomposed; iodide of azote separates into its elements, the iodine appearing as a purple vapour, and the azote assuming the gaseous form

DETRI'TUS and DEBRIS, two words now universally received into the language, the former of Latin, the latter of French origin. They are very frequently employed in works of geology and physical geography, when treating of the formation of alluvial deposits. By *debris*, in geological language, is meant generally the fragments of rocks, boulders, gravel, sand, trunks of trees, carcasses of animals, &c., detached from the summits and sides of mountains by the effect of the elements, or resulting from sudden convulsions at the surface of the earth. By *detritus* we understand the same debris finely comminuted or pulverized by attrition. Debris in general comprises detritus; but detritus excludes the idea of the larger debris.

Modern debris seldom extend beyond the foot of the mountains whence they are derived, the channels of torrents, and the higher parts of the beds of rivers; detritus alone, except in the case of such things as float, being carried down to the mouths of large streams. The boulders which lie strewn over such great extents of land, and which are found at great depths below the surface soil, together with fossil trees, bones of animals, &c., are the debris of a former age, no cause now in action being apparently capable of bringing them to such distances from their original sites.

DETROIT, a fortified town and capital of the Michigan territory or State (for we believe Michigan has, in the present session of congress, 1836-7, been admitted into the Union) in the United States of America, is situated in Wayne county, on the bank of the river Detroit, one mile from Lake Saint Clair. The town was founded by the French about the year 1670; it was taken in 1812 by the English under General Brock, and recovered in the following year by the Americans under General Harrison. The fort is a regularly constructed work, with parapets and bastions, and surrounded by palisades, a deep ditch, and glacis.

Detroit is a thriving place, and carries on an active trade with Ohio and New York. Several lines of railroad have been projected, which, when completed, must add importantly to the trading facilities of the town. One of these lines, to connect Detroit with the east side of Lake Michigan at the mouth of the river Saint Joseph, was begun in the spring of 1836; when completed it will be nearly 200 miles long, and will accomplish a direct line of communication between Lake Michigan and New York, through Lake Erie. There were, belonging to the town in 1834, 13 steam-boats and 69 other vessels of the aggregate burthen of 4913 tons. The population of Detroit in 1821 was 1422; it had increased to 2222 in 1831, since which time the number has been greatly augmented. There are two incorporated banks established in the town, with capitals amounting to 1,550,000 dollars. Detroit is 526 miles north-west from Washington.

DETTINGEN, a market-town in the circle of Aschaffenburg and province of the Lower Main, in Bavaria: it lies on the right bank of the Main, has 80 houses and about 600 inhabitants. It was the scene of the signal victory obtained, on the 26th June, 1743, by the allied forces of England and Austria over the French army under the Marshal Duke de Noailles. The allies were commanded by the earl of Stair, and animated by the presence of George II., king of England.

DEUCA'LION, a prominent personage in the mythical traditions from which Greek history sprung up. He is represented as the son of Prometheus and Clymene (Schol. Pind. *Olymp.* ix. 72), or of Prometheus and Pandora (Strabo, ix. p. 443, and others), and is sometimes called the father (Thucyd. i. 3), and sometimes the brother of Hellen (Schol. Apollon. iii. 1086), the reputed founder of the Greek nation. The seat of his authority was Thessaly, from which, according to general tradition, he was driven to Parnassus by a great deluge (Apollodorus, i. 7, 2), which, however, according to Aristotle (*Meteorol.* i. 14), occurred between Dodona and the Achelous. But whatever may have been the scene of Deucalion's deluge, the old traditions represent it merely as a local one; and it was not till the time of Ptolemy Philadelphus, when the Hebrew scriptures became known to the Greeks, that some features borrowed from the universal deluge of Noah were incorporated into the story of the Thessalian flood. (See Clinton's *Fasti*, vol. i., p. 43, note.) The legend which tells how he repeopled the wasted district by throwing stones behind him on Mount Parnassus, in obedience to the injunctions of the oracle of Themis, is well known to the readers of Ovid. (*Metam.* i.

375, foll.) The date assigned to Deucalion by the Parian Marble is 1548 B.C., and by Eusebius 1541 B.C.; but the stories connected with his history are so manifestly fabulous, that doubts as to his actual existence are unavoidably entertained, and it seems reasonable to conclude that he was a mere personification. It must be confessed that there are no etymological grounds for thinking so, as appears to be the case more or less with the early kings of Attica (*Philolog. Mus.* ii., p. 345, foll.), for the name Deucalion seems to signify nothing more than 'the illustrious' (Hesych. sub v. δευκές), and is a possible name for a real person; it was also borne by a son of Minos II. (Apollod. iii. i. 2.)

DEULE, CANAL DE, is chiefly in the department of Nord in France. It commences in the river Scarpe and runs north-west to the neighbourhood of La Bassée; a small canal from that place joins it. It then turns to the north-east, passes through Lille, and turning again to the north-west joins the Lys at Denslemont near Warneton. Its course is partly in the department of Pas de Calais. Its whole length is about 40 miles. The part from the Scarpe to Lille is called Haute (or Upper) Deule, and was finished in 1690: from Lille to the Lys it is called Basse (or Lower) Deule.

DEUTERO'NOMY, the fifth book of the Pentateuch, or five books of Moses. The Hebrew title אלה הדברים, aleh hadebarim, 'These (are) the words,' consists as usual of the commencing phrase, a mode of appellation similar to that adopted in technically quoting a legal instrument. Among the Rabbins it is also called *sepher tuckhuth*, 'the book of reproofs,' or 'denunciations,' of which there are many, as in chs. iv. ix. xxviii. xxx. xxxii; and *Mishneh torah*, the repetition of the law, a restatement being made in this book of the Mosaic laws contained in the preceding books of the Pentateuch. The Greek title Δευτερονόμιον, *deuteronómion*, given in the Septuagint translation, is equivalent to Mishneh torah, being composed of two words signifying 'second' and 'law.' By the Jews this book is divided into ten paraschioth, or chapters. In the translations the number of chapters is thirty-four. The events directly related by the writer are comprised in a period of five lunar weeks, from the commencement of the eleventh month to the seventh day of the twelfth month of the fortieth year of the wandering of the Israelites in the wilderness, after their departure from Egypt. The book is generally considered to have been written A. M. 2553, or 1451 B. C., by Moses, in the last year of his life, when at the age of 120, and in the plains of Moab (i. 5; *Numbers* xxxiii.50, xxxv.1), near the ford of the Jordan, where the Israelites afterwards crossed over into Canaan: not 'over against the Red Sea' (i. 1), as in the authorized version, where the word סוף, Suph, the name of a city or nation, is wrongly translated the Red Sea, but as Dr. Geddes reads, 'in the wilderness on the other side of the Jordan, in the plain, over against Suph,' only 'eleven days journey from Mount Horeb,' the Israelites on their way from thence to the Jordan having wandered about nearly forty years. The opinion which attributes the authorship of this book to Moses is attended with difficulties which have induced Eichhorn and other learned commentators to assign a much later date to it than the age of Moses. The concluding chapter, which gives an account of the death of Moses, and of his having been buried by God, is believed by most but not by all of the commentators to have been not written by Moses, for some consider this account as a prophetic one, related in the past tense, a practice not unusual among the Jewish prophets. This last chapter is supposed by others to have been jointly or rather successively supplied by Joshua, Samuel, and Esdras. Dr. Adam Clarke adopts the opinion that it is properly the first chapter of the following book of Joshua. (Clarke's *Bible*, Alexander's *Heb. and Eng. Pentateuch*). This opinion seems probable, as the Pentateuch in some synagogue copies is written as one continuous whole. However the assertion in verse 10, that 'there arose not a prophet since in Israel like unto Moses,' indicates a longer subsequent period than that from the death of Moses to the death of Joshua; and it must be remarked that the book of Joshua contains an account of the death and burial of Joshua (xxiv. xxix. xxx). The first book of Samuel also gives an account of the death and burial of Samuel (xxv. 1). Calmet suggests that the parts of the book of Deuteronomy which are not attributable to Moses may have been written by Aaron; but unfortunately for this suggestion the book itself contains an account of the death and burial of Aaron, as having occurred long before the earliest time at which it is supposed to have been written. (Deut. x. 6.) Some writers have assumed that the whole book was written considerably after the age of Moses, probably after the return from the captivity of Babylon, when the sacred canon was re-collected and arranged; and they maintain that the entire plan of the book indicates it to be the work, not of Moses, but of another writer, who relates the proceedings of Moses historically in the third person, and occasionally introduces him as speaking at length in the first person. This dramatic style of the antient Jewish historians commences at the sixth verse of the first chapter whence Moses speaks in the first person to verse 41 of chap. iv. The remaining nine verses of this chapter, and the beginning of verse 1 of chap. v., are by the writer. Moses is thence represented as speaking until chap. xxvii; in the 1st, 9th, and 11th verses of which the writer speaks. Thence, to the end of chap. xxviii., the words of Moses are continued. In verses 1 and 2 of chap. xxix. the writer speaks, and again in chap. xxxi., verses 1, 7, 9, 10, 14, 16, 22, 23, 24, 25, and 30; in chap. xxxii., verses 44, 45, and 48; in chap. xxxiii., 1; and finally throughout the xxxivth and concluding chapter. In the translation of the Bible by Dr. Geddes, all the parts consisting of the words of Moses are distinguished by inverted commas from the words of the writer by whom they are introduced. Besides an historical repetition from the preceding books of the Pentateuch of the events which passed throughout the forty years from the departure from Egypt, the book contains a complete recapitulation of the moral, ceremonial, and judicial law, exhibited in the preceding books of Exodus, Leviticus, and Numbers, with alterations, and some additions; as, for instance, that of the law (xxi. 18) which requires the parents of a stubborn son to lead him forth to be stoned to death by his fellow citizens. In repeating the 4th article of the decalogue (v. 12, 15), a difference from Exodus (xx. 8, 11) in the reason assigned for the sanctification of the Sabbath has occasioned considerable controversy on the subject. It is said in Exodus, 'the Lord rested on the seventh day, *wherefore* he blessed and hallowed the Sabbath day.' In Deuteronomy it is said, 'the Lord brought the Israelites out of Egypt, *therefore* he commanded them to keep the Sabbath day.' The thirteen first verses of chap. xxviii. proclaim the blessings promised to the observers of the law, and the fifty-five following verses recite the curses on the disobedient. The twelve last verses of the xxviith chap. contain the twelve curses which serve to compose the Commination of the English Liturgy. The passages in chap. xviii. 15, 18, 19, are considered as prophetical of the Messiah, on the authority of Acts iii. 22, 23; and vii. 37. Chap. xxxii. consists of the last song of Moses, the poetry of which, in the opinion of a very competent judge, Bishop Lowth, is singularly magnificent. Dr. Adam Clarke remarks, that 'very few parts of the Old Testament Scriptures can be read with greater profit by the genuine Christian than the book of Deuteronomy,' which is to be considered as correlative with St. Paul's Epistle to the Hebrews. Some important amendments are proposed by Dr. Kennicott, in his 'State of the Hebrew Text,' especially in chap. xxxiii. 1-5, the adoption of which Dr. Clarke recommends, on account of 'the impossibility of giving a rational meaning to the text as it now stands.' In Wilson's 'Archæological Dictionary,' article *Law*, a valuable tabulated exhibition is given of the whole Mosaic Law, in three classes, moral, ceremonial, and political, with the places of references to Exod., Levit., Numb., and Deut. Dr. Adam Clarke concludes his commentary on the book with six elaborate chronological tables, for which he deserves the thanks of every biblical student. The 'Biblioth. Brit.,' by Watt, contains a numerous list of sermons and commentaries on Deuteronomy. (Eichhorn's *Einleitung in das Alte Test.*, abtheil ii., p. 385-433; Poli *Synopsis Criticorum*, tom. i., p. 751-895; Calmet's *Dict.*; Horne's *Introduc.*, vol. iv., p. 24; *Horæ Mosaicæ*, by Rev. G. Faber; *Lectures on the Pentateuch*, by Dr. Graves; *Comment. on the Mosaic Laws*, by Michaelis, trans. by Dr. Smith.)

DEUTZIA, a genus of deciduous shrubs, inhabiting the North of India, China, and Japan, and nearly allied to Philadelphus, with whose species they agree in habit, but from which they differ in having their flowers generally smaller and more panicled, and in the filaments being toothed, and placed on the outside of a cup-shaped disk.

DEUXPONTS (Germ. *Zweibrücken*), formerly a duchy but now a bailiwick (*Land-comissariat*) in the south-western part of the Bavarian province of the Rhine, is bounded on the south by France, and on the west by the Prussian province of the Lower Rhine. It has an area of about 1181 square miles, and a population of about 140,000 souls: and contains three circles, five towns, five market-towns, and 208 villages. The general character of the country is mountainous, with many gentle eminences, whose declivities and lowest parts are rich in woods, corn-fields, pastures, and vineyards. The principal river is the Blies, into which flow the Erlbach, Hornbach, Schwolb, and other streams. Deuxponts produces rye, barley, oats, and other grain; rapeseed, flax, and hemp are cultivated in large quantities, but the two last are not converted into manufactured articles. Much attention is paid to the rearing of horses and cattle, and particularly to the breeding of sheep. There is abundance of wood. The only minerals are iron, copper, and freestone. There are few manufactures.

DEUXPONTS, the capital of the bailiwick, in 49° 24′ N. lat. and 7° 20′ E. long., is a pretty town situated on the Erlbach, about fifty miles west of Spires. It is embosomed in gardens and luxuriant meadows, encircled by eminences and woods. The town, which consists of the Old and New Towns, is surrounded by a wall, has a pleasant suburb, and is regularly built: it contains about 850 houses, and 7200 inhabitants, 5300 of whom are Protestants and 180 Jews. Of the public edifices the principal are a handsome old palace, part of which is at present used as a Roman Catholic place of worship, two Protestant churches, a gymnasium and lyceum, an orphan asylum, an hospital, and a school of industry. The inhabitants are engaged in various branches of industry, especially in breeding Merino sheep; linens, leather, oil, plaster of Paris, tobacco, and steel ware, are manufactured. The printing-press still exists from which issued the editions of the Greek and Latin classics, by Croll, Emser, and Erter. Deuxponts is the seat of the judicial tribunals for the bailiwick as well as of its local government. Close to the town is 'Schifflick,' a country seat built by Stanislaus Lesczinski king of Poland, which has been converted into an establishment for breeding horses.

Deuxponts, or 'Two-bridges' (in its Latinized form, Bipontium) derives its name from the site of its old castle between two bridges. Its origin is unknown, nor is it mentioned in history until the year 1197, when it was the property of the counts bearing its name. On the extinction of the direct line, in 1394, the earldom fell into the possession of Ruprecht, the elector-palatine, who divided it among his three sons, in 1410, all of whom being dukes, the country itself was thenceforward denominated a duchy. During the Thirty Years' War it was overrun by the Imperialists under Gallas, who laid siege to the town and treated it with great barbarity. Deuxponts suffered also severely during the campaigns of Lewis XIV., and the French held possession of it until the peace of Ryswick in 1697, by the terms of which they were obliged to evacuate the place. As the duke, in the meantime, had died childless, it fell to the next heir, Charles XII. of Sweden, and, upon his decease, to the count-palatine: this prince also dying without children, in 1723, the duchy reverted to the house of Birkenfeld, the ancestors of the family who now occupy the throne of Bavaria. In 1793 Deuxponts was taken possession of by the French, but it was restored to Bavaria in 1816, when other adjacent territories were added to it, and the whole was annexed to its dominion by the name of the Province of the Rhine.

DEVELOPMENT. (Algebra, &c.) A name given to the process by which any mathematical expression is changed into another of equivalent value or meaning, and of more expanded form. It is not to be understood that development either facilitates the calculation or the explanation of an expression, necessarily; it may sometimes do the one, and sometimes the other, but as often it is the reverse. Nevertheless, the mathematical use of an expression is frequently facilitated by employing its development, and this in a great variety of ways.

The expression of common algebra will frequently furnish instances of this. Let us take the development of $(x+y)^3$, namely $x^3+3x^2y+3xy^2+y^3$. The original expression implies an addition and two multiplications, while the development involves six multiplications as difficult as those of the original, two of a more simple character, and three additions. Nevertheless the BINOMIAL THEOREM, of which the preceding is a particular case, is the foundation of many important branches of algebra. But the usual form of development is into infinite series [SERIES], a subject of peculiar interest, and the various points of which, as may readily be seen from comparison of mathematical writings, are not perfectly well settled.

The mere word development suggests only one question, namely, what connexion exists between the expression itself and its development. Are they both actual representations of the same arithmetical value? Or do they merely represent algebraical forms which have the same properties? There are cases in which the first question must be answered in the affirmative, and others in which the second question must be so answered, while it is palpably the contrary with regard to the first. Without entering into the reasons of such difficulties, it must here suffice to remind the student who seeks for such matter as is immediately connected with the common use of the word, that he must be cautious what he admits upon any point connected with it, since it may frequently happen that he will find himself endeavouring to reconcile a very narrow meaning of the term with the forms of expression used by writers who take for granted a knowledge such as can only be acquired by considerable experience and reflection. So wide is the modern use of the term, that the following caution may frequently be useful. When an author speaks of the development of an expression, remember that he may have so extended a signification of the word, that the student should consider him as meaning merely 'algebraical substitute,' or an expression which may be used for the original without change of algebraical properties. He will hardly understand what we mean, nor is it for our present purpose necessary that he should do so: our intention will be answered, if, in referring to this work for the use of this particular term, he should be distinctly made to understand that in all probability his difficulty arises from an indistinct view of the meaning of equality, or of the sign $=$, as employed in algebra, such as we conceive a very eminent modern English writer to have had, when he proposed, in order to overcome the difficulties attending the interpretation of a series, to consider *one* and *one* as having a meaning distinct from *two*.

There are two points connected with developments which it may be worth while to point out, as illustrative of this (at first sight) apparent want of connexion between an expression and its development, which it should seem ought to exist between two forms which are used indifferently each for the other.

1. An expression may preserve an algebraical identity with its development in cases where arithmetical identity is entirely lost. Let us consider the series $P=1+x+x^2+\ldots.$ continued without end, of which it is an evident property that $P=1+xP$. And the same is also a property of its well known equivalent form $1\div(1-x)$ which is in truth nothing more than the value of P derived from the last equation. But suppose that $x=2$, and there is no imaginable arithmetical connexion between $1+2+4+8+\ldots.$ continued for ever, and $1\div(1-2)$ or -1. On this point see, INFINITE, DIVERGENT, and SERIES.

2. A development may present an intelligible result, in cases where the original expression altogether loses meaning. Thus, let the following expression be considered, 'the product of all whole numbers, beginning with 1 and ending with x,' of which 1.2.3.4.5 or 120 is a particular case. Considering this as a function of x, it is obvious that we can find meaning and value in all cases in which x is a whole number. But when x is a fraction, we lose all idea of meaning: what is implied for instance, by the product of all whole numbers up to $10\frac{1}{4}$? Nevertheless, when we take the approximate expression for this product mentioned in COMBINATIONS, or the series of which it is the first term, namely,

$$\sqrt{2\pi x}\left(\frac{x}{\varepsilon}\right)^x\left(1+\frac{1}{12x}+\frac{1}{288x^2}+\cdots\right)$$

the difficulty has disappeared: this series is as easily intelligible and calculable when x is a fraction as when x is a whole number. This paradox, namely, an alteration of form giving more meaning to an expression than it had at first, is of a character which cannot be briefly treated.

The inverse word to development should be *involopment*, so that while we say that $1+x+x^2+\ldots$ is the development of 1 ÷ (1 − *x*), we should also say that the latter is the *involopment* of the former. But the latter term is never used, which frequently gives rise to a circumlocutory and sometimes defective mode of description.

DEVENTER, a fortified town in the province of Overyssel, is situated on the right bank of the river Yssel, about forty-six English miles east from Amsterdam. Deventer was formerly a free imperial city, and a member of the Hanseatic league. The town is surrounded by a wall flanked with numerous towers, and defended by a broad deep ditch. The cathedral is a fine Gothic building, with an excellent set of bells. The college contains a well-chosen and extensive library; population 10,500.

DEVEREUX. [ESSEX.]

DEVICE, an emblem or ensign, formerly borne on shields or embroidered upon banners as a cognizance, contemporary, in the history of heraldry, with coat-armour itself. As early as the twelfth century, King Henry II. caused certain devices to be painted, which had a descriptive reference to his name: the *planta-genista*, or broom-sprig, and a jenet passing between two broom plants, the former of which is engraved upon the Great Seal of his son, Richard I., on either side of the throne. For many succeeding centuries these devices appear to have been confined to the royal use; but from the reign of Richard II., various houses of the nobility adopted their use. Thomas Mowbray, duke of Norfolk, appeared against Henry, duke of Hereford, in the celebrated just at Coventry, upon a horse whose velvet trappings were embroidered with lions and mulberry trees, intended to typify his name. The devices of greatest notoriety were the white and red roses, by which the contending families of the royal stem are still metaphorically described. From the close of the fifteenth to the middle of the sixteenth century the frieses, entablatures, and stained windows of the more sumptuous habitations were crowded with devices. The Bourchier and Stafford knots were of this description. Camden, in his Remains, has a section entitled 'Rebus, or Name-Devices;' these were probably adopted in imitation of the emblems which, during the Neapolitan wars of the fifteenth century, were painted by the Italian chiefs upon their shields, accompanied by mottoes or quotations descriptive of enterprise, or of the general character of the bearer. Such were called Impresses, from the Italian word 'Impresa.'

DEVIL is the English name of the malignant evil being—the great spiritual adversary of mankind. He is regarded as the chief of a host of rebellious angels who, before the creation of the world, and after a contest with the obedient angels, headed by the archangel Michael, were expelled from heaven (2 Peter ii., 4; Rev. xii., 7—9; Jude 6.) for the sin of arrogance and insubordination. The etymology of the word is variously given by different lexicographers. Dr. Johnson, supposing its derivation to be from διάβολος (diabolus), considers divel the more correct mode of spelling. Others assert devil to be a mere contraction of *the evil*, as God from *the good*. (Lemon's *English Etymology*.) It is however apparent that, as Christianity was originally diffused throughout Europe from the church of Rome, the Latin diabolus and Greek διάβολος produced the Welsh *diafol*, Saxon ꝺıoꝼul and ꝺeoꝼl, Gothic *diofl*, English *devil*, German *teufel*, Dutch *duyvel*, French *diable*, Spanish *diablo*, and Italian *diavolo*, as these appellatives are similar not only in form and sound, but in designating the peculiar character of this evil being; and their existence is subsequent to the introduction of Christianity. The simple original signification of διάβολος (διαβάλλειν) is adversary, accuser, calumniator, opponent; it therefore serves to translate the Hebrew שָׂטָן *satan*, which has precisely the same meaning. (Heb. and Gk. Lexicons of Parkhurst and Pasor.) The name διάβολος is applied to the spirit of evil as being specially the accusing enemy of the human race, who accuses them before God night and day (ὁ κατηγορῶν, &c. *Revelation* xii. 10). Divines enumerate about thirty different titles appropriated to the devil. The following are some of the principal:—

The god of this world (age, seculum), ὁ Θεὸς τοῦ αἰῶνος τούτου, 2 Corinth. iv. 4. The prince of this world, ὁ ἄρχων τοῦ κόσμου τούτου, John xii. 31. The prince or power of darkness, the prince of the power of the air, ὁ ἄρχων τῆς ἐξουσίας τοῦ ἀέρος, Ephes. ii. 2. The angel of the bottomless pit, Abaddon or Apollyon, ὁ ἄγγελος τῆς ἀβύσσου, Ἀβαδδὼν, Ἀπολλύων, *Rev*. ix. 11. The prince of devils, ἄρχων τῶν δαιμονίων. The great red dragon, old serpent, devil and satan, δράκων μέγας, πυῤῥὸς ὁ διάβολος, ὁ Σατανᾶς, *Rev*. xii. 3, 9; and xxii. 2. A murderer from the beginning, a liar, and the father of lying, ἀνθρωποκτόνος ἀπ᾽ ἀρχῆς, ψεύστης, καὶ ὁ πατὴρ αὐτοῦ. The tempter, ὁ πειράζων, Matth. iv. 3.

For explanations of numerous other appellatives, as Beelzebub, Lucifer, Belial, &c., we refer to the various works mentioned in the present article. The statements under the word Devil in Cruden's *Concordance* may serve to represent the doctrine of the church concerning the power and dominion of this being. Man, it is said, since the fall, is under the tyranny and slavery of Satan, who is an adversary surprisingly subtle, with strength greatly superior to ours; with malice the most deadly, and with activity equal to his malice. He has principalities and powers under his command, and walks about like a roaring lion (1 Peter v. 8) to tempt and betray us, seeking to involve us in sin, and to bring us to ruin and everlasting misery. In a work entitled 'The Attributes of Satan,' 8vo., 1816; also 'An Essay on the Existence of the Devil, and his Influence on the Human Mind,' 12mo., 1810, and an Essay 'On the Influence, Power, and evil Agency of Satan,' 8vo., 1822, it is maintained that the same testimony which establishes the existence of God establishes also the existence of the devil, that is, an evil spirit, the enemy of the whole human race, who possesses the power of exciting evil thoughts and actions; and that though God in his wisdom has left his expulsion from heaven in mystery, there is no one point on which the Scriptures are more clear and explicit than this, that the hearts of men are under his dominion. In a subsequent part of this article we shall notice the discrepancy of opinion among Christians as to the reality and personal existence of this evil being.

It is not altogether useless nor uninstructive to trace the history of opinions, however absurd they may be. As to the notions entertained of this evil being, it would be easy to show that in forming their speculations upon his nature, men early abandoned the plain words of Scripture, and by consequence fell into the wildest extravagances and conjectures. The more the knowledge of the original text and the exact study of it declined, the more did superstitious and unfounded notions as to this being obtain credit among mankind. The history of these absurdities is often ludicrous enough, but unfortunately the belief in supernatural agency of all kinds forms also one of the darkest chapters in the history of our race. Ignorance, which is the parent of superstition, is also the parent of cruelty and persecution. But as the popular belief in witchcraft is now gradually disappearing before sound knowledge, so the absurd and unscriptural notions of the nature and power of that evil being whom we call the devil have gradually lost ground since the Bible has been translated into modern languages and become the possession of the humblest reader. Divines too have at last discovered that a critical investigation of the original text of scripture, on this as well as other subjects of revelation, can alone lead to any true results.

An early sect of Christians we are told worshipped the devil. 'The Ophites,' says Tertullian, 'worship the serpent-devil more than Christ, because by him we have the knowledge of good and evil.' Of the conviction entertained by some of the early Christians of the supernatural power of the devil, we have abundant proof in the accounts of demoniacal possessions and exorcism recorded in the writings of the fathers. Saints Anthony, Bernard, and Dominic, we are told, had frequent communications with Satan himself. (Butler's *Lives of the Saints*.) Even Luther relates his personal discussions with the devil, whom he compliments as being a very expert logician, with a loud and sonorous voice, 'Diabolus sua argumenta fortiter figere et urgere novit voce gravi et forti.' (Luther, *de Missa Privata*, tom. vi. p. 28.)

The curious work entitled 'Compendio dell' Arte Essorcista,' by Girolamo Menghi, 12mo. 1601, gives a history of the supposed process of ejecting devils. The subject of the devil's battle with Michael and his expulsion from heaven excited during a long period the subtle wits of the schoolmen, in ascertaining when and where it was fought, what time it occupied, what was the number of forces arranged on each side, and what was the rank of each commander; questions which at length were determined by dint of logic, proving the battle to have lasted precisely three seconds, &c. (Reginald Scott's Treatise on the Nature and Substance of Devils, fol. 1665, Lucifer's Fall, ch. 8. Heywood's 'Hierarchy of Angels, and Fall of Lucifer,' fol. 1635.) St. Jerome declares it to have been the common opinion of the primitive church that the middle region of the air between heaven and earth was still crowded with devils. During the sixteenth century the prevalence of the belief in the devil's supernatural agency was truly alarming. A sermon on witchcraft preached by bishop Jewel before queen Elizabeth, entreats her majesty to check the tremendous operations of the devil by exterminating his agents, the witches and wizards, who were then very numerous. ('Discovery of Witchcraft, by Reginald Scott,' fol. 1665. 'Doctrine of Devils the grand Apostacy, an essay to rectifie the undue apprehensions we have about evil spirits,' 12mo. 1676.) The following description of the devil's personal appearance in the days of Reginald Scott, is taken from the author's treatise on the subject. 'Our mothers' mayds,' he says, 'terrifie us with the ouglie devel, with hornes on his head, fier in his mouth, a huge tayle in his breech, eies like basons, fangs like a boar, claws like a tiger, a skin like a bear, and a voice roaring like a lion.'

Before the end of the last century, this extravagant superstition had greatly subsided, and tracts tending to make the existence of devils a questionable point began to appear even from ministers of the church; for instance, 'An Inquiry into the scriptural meaning of the word Satan,' by the Rev. Mr. Barker of Leeds, 8vo. 1772; 'Advocates for Devils refuted' by the Rev. H. Huntington, 8vo. 1794; 'An attempt to show that the opinion concerning the Devil or Satan as a fallen angel, and that he tempts men to sin, has no foundation in scripture,' by William Ashdowne, 8vo. 1791. The following work is of an earlier date, with a similar design, 'A critical Dissertation concerning the words Δαίμων and Δαιμόνιον,' 8vo. 1738. In these treatises it is contended that the word Satan is never used in the Old Testament as a proper name, to signify a fallen angel, or an evil spirit really existing: and that even Diabolus in the New Testament will admit of explanations which are inconsistent with the existence of the devil. A more recent and elaborate work, by a minister of the Unitarian community, the Rev. Russel Scott, is 'An analytical investigation of the Scriptural claims of the Devil,' 8vo. 1822. The proposition sought to be proved in this work may be stated in the words of the Rev. John Simpson ('Essays on the Language of Scripture,' vol. i. p. 159.) that, the word Satan or devil signifies, throughout the Scriptures, an adversary; that no single text, nor any number of texts in which these words occur, afford any proof of the proper personality or real existence of any such being as Satan or the devil is generally supposed to be; and that many distinct passages, and the general spirit of them all, oblige us to understand these terms figuratively, not of a *real*, but of an *allegorical* person.' Several hundred passages are adduced in proof and illustration of this statement, and it must be observed that the instances in which Satan and Diabolus, being taken in a particular instead of a general sense, have been unwarrantably Englished by the word *devil*, are sufficient to show the impossibility of forming any just argument on this subject from the authorised version, without referring to the words of the original text. The word Satan occurs in the Old Testament thirty-four times, and is variously translated in adaptation to preconceived dogmas, and occasionally in disregard of consistency, as in 1 Chron. xxi. 1, where it is said that *Satan* urged David, which is at variance with the statement in 2 Sam. xxiv. 1, which says the Lord in anger urged him, that is *an adversary*. God's angel stood as *Satan* (an opponent) before Balaam's ass to *satanize* (oppose) his progress. (Numb. xxii. 22. 32.) Dr. Campbell, in his 6th preliminary Dissertation (on διάϐολος) observes, that the prefixing of the article restricts the signification to the devil, but that without the article the sense is accuser in general; otherwise in Titus ii. 3, the aged women would be exhorted to refrain from being, not false accusers, but *devils* (διάβολοι). We must here notice the work of Dr. Bekker of Amsterdam, 'Die Bezauberte Welt, oder eine gründliche untersuchung des allgemeinen aberglaubens betreffend die Art und das Vermögen Gewalt und Wirkung des Satans, und der bösen geister über den menschen,' Balthasar Bekker, S. T. D. 4to., Amsterd. 1673. Bayle, in one of his letters (tom. i. p. 340), says that the publication of this work caused a great commotion in Holland, and that the synods took alarm at the fact of a learned theologian having composed a book to demonstrate the non-existence of the devil and his angels. The author adduces and explains all the passages in the Scriptures which relate to the subject, and concludes that there is no satisfactory evidence of the devil's existence: observing that, if all which is commonly believed about him were true, he would be infinitely superior to God in the extent of his power, in the number of his subjects, and in the ready obedience they render. The two following works are replies, 'De gebannen Duyvel weder in geroepen,' &c. (The banished Devil recalled) 4to., Amst. Dr. Bekker, 'Consideratien over zyn Boek,' door I. S., 4to., Amst. Bekker's work is translated into French, 4 tomes, 12mo., 1694, Amst. Another very learned production nearly to the same purpose, is by the distinguished biblical critic John Salomon Semler, entitled, 'Versuch einer biblischen Daemonologie, oder untersuchung der lehre vom Teufel und seiner macht,' 8vo., Halle, 1785.

This and a large number of other treatises on the same subject are examined and replied to, in the 'Historia Diaboli,' by John Godof. Mayer, 8vo. 1780, a work written in Latin, and replete with curious learning and researches on the existence and power of evil spirits, and their state before and since their fall from heaven. The reader may consult also Schulz, 'Untersuchung über die bedeutung des worts Teufel und Satan in der Bibel.' Other learned works of Germany on this subject are G. F. Meyer, in 'philosophischen gedanken von den wirkungen des Teufels;' Cotta, 'historia dogmatis de angelis;' Edelman's 'Glaubensbekenntniss;' Faber's 'dissertat. de influxu adæmonismi;' Pfaffius 'dissertat. de operationibus diabolicis in hoc mundo.' Among the German adæmonists, or those who deny the personality of the devil, may also be named Wetstein, Webber, Naudæus, Wagstaaff, Reich and Damm. Unitarians, in accordance with the scriptural adæmonists of Germany, maintain that the Bible affords no sufficient evidence of the existence of a being purely malevolent, endowed with indefinite powers to do mischief, who shares with God the attributes of omniscience and omnipresence, and destroys his claim to omnipotence and infinite goodness. In rejecting therefore the theory of dualism, they attribute to God alone whatever exists, and especially refer to the passage in Isaiah (xlv. 7) where God expressly says, 'I create evil.' The reader may see the question as to those who in the Gospels are described as being possessed with devils treated at large by the commentators, and especially by Worthington, Barker, Lardner, and others.

The statements of biblical critics upon the subject of the temptation recorded in the first book of Genesis are very various and discordant. (See Edwards, Πολυποικίλος Σοφία, p. 61.) 'From the authority of many of the antient interpreters,' says Dr. Middleton, 'and from my own reflections, I have ever been inclined to consider the story of the fall of man as a moral fable, or allegory, in which certain doctrines are represented by a fiction of persons and facts, which had no real existence, for to understand it literally shocks at once the principle of probability.' (Middleton's Works, vol. ii. p. 131.) Dr. Clarke in his edition of the Bible declares this to be 'one of the most difficult and most important narrations in the whole book of God,' believing it however, in opposition to Middleton, to be, not an allegory, but a relation of facts. Dr. Clarke, finding the Hebrew word *nachash*, which is translated serpent, to be an ideographic term admitting of numerous meanings, resorts to the not very dissimilar Arabic word *chanas*, signifying ape, fiend, or satyr, and thence concludes that on this occasion the tempter assumed the form of a monkey, or ourang-outang, adding that the ability to chatter is all they have left of their original gift of speech which they lost at the fall. Such speculations, though supported by learning and ingenuity, can scarcely be said to be confined within the legitimate limits of scriptural interpretation.

Plutarch in his treatise on Isis and Osiris, speaks of the great antiquity and universality of the dogma of the two principles. All nations, he says, have admitted two deities, one the author of good, the other of evil. In Persia, the deities of good and evil, or light and darkness, were Oromasdes and Ahrimanes (ARIMANES); in Egypt and Phœnicia (Sanchoniathon), Osiris and Typhon.

As to the account of the origin of evil in the antient cosmogonies the student will find a store of erudition rather curious than useful in 'L'Origine de tous les Cultes,' par Dupuis, 4to., tome ii., c. 5; tome iii., c. 1. In Beausobre's 'Histoire de Manicheisme,' 4to., tome ii., l. 5; Bayle's Dict., art. 'Manicheens'; Dr. Hyde's 'Hist. Relig. Veterum Persarum;' Brunet, 'Parallèle des Religions,' 4to., tome i., p. 69; Gebelin's 'Monde Primitif;' Selden 'De Diis Syriis;' Mallet, 'North. Antiq.;' Brucker's 'Vedam,' tom. v. and vi.; Bryant's 'Analysis,' vol. iii.; Anquetil du Perron's 'Zendavesta,' 4to., 1771; Maximus Tyrius, dissert. 38, 'On Serpent Worship of Antient India.'

To the works incidentally mentioned on the subject of this article may be added—Michael Psellus, 'De Operatione Dœmonum,' 1615; M. Illyricus, 'Demonstrationes de Essentiâ Imaginis Dei et Diaboli,' 1569; Peter Viret's 'Devil let loose,' 1588; 'A Dissertation in Logic, arguing the moral, religious, and political Use of a Devil or Evil Spirit,' 1797-99, by G. Leicester; Dr. Hibbert's 'Philosophy of Apparitions;' art. 'Demon,' in Calmet's Dict.; A Comedy on the Temptation of Christ by Satan in the Desert, 1538, by John Bale, bishop of Ossory; Dissertations by Perkins, Waldegrave, Udall, Andrews, Farmer, &c. on the Combat of Jesus and the Devil in the Wilderness. De Foe's 'History of the Devil' is merely a satirical and political composition. As poetical fictions on the subject, see Milton's 'Par. Lost;' Dante's 'Inferno;' Rev. Robert Montgomery's 'Satan.'

DEVIL IN A BUSH, } vulgar names of the genus
DEVIL IN A MIST, } Nigella.

DEVIL'S BIT, the vulgar name of Scabiosa succisa.

DEVISE. [WILL.]

DEVIZES, a borough and market town, having separate jurisdiction, locally in the hundred of Potterne and Cannings, in the county of Wilts; 22 miles N.W. by N. from Salisbury, 19 E. by S. from Bath, and 89 W. by S. from London.

Before the Boundary Act, the borough of Devizes was considered to be coextensive with the parishes of St. John the Baptist and St. Mary the Virgin, including an old disparked park and the site of the antient castle; but since the passing of that act, for the purposes of parliamentary representation, the town extends into the chapelry of St. James and into the parish of St. Rowde, which adjoins that chapelry.

In antient records this place is called Divisæ, De Vies, Divisis, &c. The origin of the name seems to be a supposition that this place was divided by the king and the bishops of Salisbury.

In the reign of Henry I. a spacious and strong fortress was erected here by Roger, the wealthy bishop of Salisbury, which his nephew Nigel, bishop of Ely, garrisoned with troops and prepared to defend until the expected arrival of the Empress Matilda; but Stephen having besieged it, declared that in the event of its not surrendering, he would hang the son of Bishop Roger on a gallows which he had erected in front of the castle. On this being made known to Nigel, he surrendered the fortress, together with all the bishop's treasures, amounting to the sum of 40,000 marks. This castle was afterwards seized by Robert Fitz-Herbert, on pretence of holding it for Matilda, but on her arrival he refused to deliver it up, and was subsequently hanged as a traitor to both parties. About the end of the reign of Edward III. the castle was dismantled, and the site has lately been converted into pleasure-grounds.

It appears from Leland, who calls it 'The Vies,' that in the reign of Henry VIII. Devizes was celebrated for its market. It was besieged by Sir William Waller in the parliamentary war, but just as the royalists were preparing to capitulate, Lord Wilmot, who had been dispatched by the king from Oxford, appeared on Roundaway Hill, with 1500 horse and two pieces of artillery. Sir William withdrew his forces from the town, and immediately attacked Lord Wilmot, but was totally discomfited and obliged to fly to Bristol, having lost a considerable number of men, together with all his cannon, bagage, and ammunition.

The first charter of incorporation was by the Empress Matilda, granting to her burgesses 'De Divisis' freedom of toll throughout all England and the ports of the sea. This charter was successively confirmed by all the Henrys and the Edwards. The present governing charters were granted by James I. and Charles I. The corporation have power to hold a Court of Record on Friday for debt or damage not exceeding 40*l.* The quarter sessions of the county are held here in rotation with Salisbury, Warminster, and Marlborough. Petty sessions are held quarterly before the mayor, recorder, and justice, or any two of them.

Devizes returned members to the parliaments of Edward I., to two of Edward II., and constantly since the 4th of Edward III. The revenue of the corporation is only 434*l.* per annum.

This town is situated nearly in the centre of the county, on the Kennet canal: it consists of several streets, well paved and lighted with gas, and contains many good houses. There are no buildings of any consequence, except the town-hall and the churches. The former is a handsome modern building, in the basement of which a cheese-market is held.

The parishes of St. John and St. Mary the Virgin form a united rectory, in the archdeaconry and diocese of Salisbury; the net revenue of which is 518*l.* per annum. St. John's church is built partly in the Norman style and partly in the later English style of architecture, with a square embattled tower, and consists of a nave, transept, chancel, and two chantry chapels. The chancel is very handsome, and the tower is supported by two circular and two pointed arches enriched with foliage and mouldings of different periods. St. Mary's is situated in the north-eastern part of the town. The chancel is supposed to have been built soon after the Conquest, but nearly all the rest of the structure was rebuilt by William Smyth, who died in 1436. There are places of worship for the Society of Friends, Baptists, Independents, Presbyterians, and Wesleyan Methodists.

The woollen manufacture, once of considerable importance, is now extinct. There are at present three manufactories of silk, which afford employment to about 400 persons: the weaving of crape and sarsnet is on the increase. The malting business is carried on to some extent, and there is a large snuff manufactory. The market is on Thursday, and is the largest in the west of England for corn. A large cross, which is said to have cost nearly 2000*l.*, was erected, in 1815, in the market-place by Lord Sidmouth, for many years member for and recorder of the borough. Fairs are held, on the 4th February for horses; Holy Thursday and April 20th, for cattle; and June 13th, July 5th, and October 2nd and 20th, for cattle, hops, cloth, &c. Devizes contains 1200 houses, and 6367 inhabitants. At the first election after the passing of the Reform Act there were 277 registered voters.

A national school was erected at the expense of John Pearse, Esq. There is a charity school called the 'Bear Club School,' in which 40 boys are instructed and clothed for three years, and then apprenticed to various trades, &c. There are also schools on the Lancasterian system and infant schools.

Richard of Devizes, a Benedictine monk of the twelfth century, who wrote a chronicle of English history, was a native of this place.

DEVONPORT, formerly called Plymouth Dock, in the parish of Stoke Damerall, hundred of Roborough, and county of Devon, 218 miles west by south from London, and one mile and a half from Plymouth.

Devonport owes its present importance to a naval arsenal established there in the reign of William III., under the name of Plymouth Dock, which name it retained till 1824, when the appellation of Devonport was conferred on it by royal permission. It was first fortified in the reign of George II., but the fortifications were considerably enlarged and improved under an act passed in the 21st year of the reign of George III. The government of the town is vested in Commissioners, among whom are the lord of the manor, who holds courts leet and baron at Michaelmas, the stewards of the manor, the rector of the parish, the commissioner of his majesty's dock-yard, the port-admiral, the mayor, aldermen, and recorder of the boroughs of Plymouth and Saltash, the manorial lords of East Stonehouse, and of East and West Anthony; with the stewards of those manors. These commissioners have the superintendence of all the affairs of the poor, the lighting, watching and cleaning of the town, and the granting of licenses to porters and watermen.

Petty sessions are held by the county magistrates every Wednesday in the town-hall, for the despatch of business connected with the town and parish.

Devonport was enfranchised by the 2nd William IV. chap. 45, and since the passing of that act returns two members to parliament. The parliamentary borough includes, in addition to the town of Devonport, the whole of the parish of Stoke Damerall and the township of Stonehouse. At the first election after the passing of the Reform Act, there were 1777 persons registered. We understand that the inhabitants of the borough have recently petitioned the king to grant them a charter of incorporation, which petition is now before the Privy Council. (March 1837.)

Devonport is situated at the south-west corner of the county, and is bounded on the south and west by the mouth of the river Tamer, which forms the spacious harbour of Hamoaze; and on the east by Stonehouse creek. The streets are wide and regular, well paved, and lighted with gas; the footpaths are made of marble obtained in the neighbourhood. The houses are generally large and well built. The Fore-street is approached from the east through a handsome gateway, where there is a fosse and a drawbridge, and forms a thoroughfare to the dock-yard. A wall, twelve feet in height, called 'the king's interior boundary wall,' defends the town on the north-east and south sides; and the heavy batteries on Mount Wise protect the entrance from the sea. Without the wall is a line, or breastwork, with a fosse excavated in the solid rock from twelve to twenty feet deep. There are three gates in the line, the north gate, the state barrier, and the Stonehouse gate. A promenade, called Richmond Walk, was recently made near the sea-shore under the direction of the duke of Richmond when master-general of the ordnance.

There is a small theatre, a subscription library, and a spacious and elegant assembly-room at the royal hotel, where balls are held. To the south of the town are convenient hot, cold, shower, vapour, and swimming baths. The water which supplies the inhabitants is brought from Dartmoor in a circuitous line of about thirty miles to a reservoir on the north side of the town, from whence it is conveyed in pipes to the different houses.

The town-hall is a spacious and handsome building, with a Doric portico. It contains a county-meeting room seventy-five feet by forty, a watch-house, temporary prison, engine-house, &c. Near it is a fluted column of the Doric order, to commemorate the naming of the town in 1824, from the top of which there is a splendid view of the harbour and the neighbouring scenery. To the south of the town are the port-admiral and the governor's houses, the telegraph, and the Grand Parade. Thirty-two telegraphic stations connect this place with the Admiralty in London; and it is said that on the occasion of Napoleon surrendering to the Bellerophon the news was known in the metropolis fifteen minutes after it was known in Devonport.

The dock-yard, one of the finest in the world, comprises an area of seventy-one acres. Within the yard is the basin, constructed in the reign of William the Third, and the dock sufficiently capacious for the reception of a seventy-four gun ship, as well as four building-slips, and three other docks, one of which, the new north dock, is 260 feet by 85 feet, and 27 feet 8 inches deep. The 'blacksmith's shop' is a building 210 feet square, containing 48 forges, the fires of which annually consume 1300 chaldron of coal. Several hundred of anchors, some weighing five tons each, are piled up on the wharf in front of this building.

The 'rigging-house,' is a splendid edifice 480 feet in length, and three stories high; it forms one side of a quadrangle, the area of which is entirely composed of stone and iron, and is called the 'combustible storehouse.' Our limits will not permit us to describe one half the objects of interest that are contained within the precincts of this dock-yard, and we must content ourselves with merely mentioning the boiling-house, the mast-house, the mast-pond, and the rope-houses. The rope-houses are limestone buildings 1200 feet long, parallel to each other, and two stories high. Cables are made here, 100 fathoms in length, and measuring in circumference 25 inches; a cable of this size weighs 116 cwt. 1qr. 6 lbs., and costs 404*l.*

The immense roofs over the docks, being on the span of an arch without a buttress, are extraordinary specimens of architectural skill; the area of one of them amounting to 1 acre 39 poles and 200 feet. The harbour of Hamoaze is four miles long and half a mile broad; its greatest depth at high water is about 20 fathoms, and at low water 15. [Plymouth.]

A chapel has recently been erected by government in the yard, the chaplain of which receives, in addition to a stipend from government, twopence per month from the pay of each of the officers and seamen belonging to ships laid up in ordinary. There are two episcopal chapels of ease at Devonport, St. Aubyn's, erected 1771, and St. John's, erected in 1799. The inhabitants have also access to the dock-yard chapel. There are places of worship for Baptists, Independents, Wesleyan Methodists, and Moravians. A classical school was established by subscription in 1821, and a public school for boys in 1808; over the latter is a school for girls, where about 100 are educated and clothed. The Baptists and Methodists have also their respective schools. A public dispensary for this town and East Stonehouse was erected in 1815, and a Savings' Bank in 1829.

Devonport is a branch of the port of Plymouth. [Plymouth.] There is a market on Tuesdays, Thursdays, and Saturdays, well supplied with provisions of all kinds. To the south of Devonport is a ferry to Mount Edgecumbe, and to the north-west, one to Torpoint. The population is returned with the parish, and in 1831 consisted of 34,883 inhabitants, of whom 19,466 were females.

DEVONSHIRE, a maritime county in the south-west part of England. Its form approximates to that of an irregular quadrangle, having for its angles, on the west, Hartland point on the Bristol channel; on the north the boundary of Devonshire and Somersetshire, near Oare, on the coast of the same channel; on the east the boundary of Devonshire and Dorsetshire, on the coast of the English channel, near Lyme Regis; and on the south Prawle Point, near the Start Point, on the coast of the English channel. The county is bounded on the north and north-west by the Bristol channel; on the north-east by Somersetshire; on the east by Dorsetshire; on the south-east and south by the English channel, and on the west by Cornwall, from which it is separated, along part of the boundary line, by the river Tamer. There is an insulated portion of the county inclosed between Dorsetshire and Somersetshire, and the boundaries, as given above, include an insulated portion of Dorsetshire which is entirely surrounded by Devonshire. The length of this county from north to south is about 71 miles; the breadth from east to west about 68. The area of the county is stated by Mr. Arrowsmith at 2580 square miles, and in the population returns at 2585: the aggregate areas of the parishes give 1,636,450 acres or about 2557 square miles. The population in 1831 was 494,478, giving 191 or 193 persons to the square mile according as we adopt the highest or lowest estimate of the area. Devonshire is the third English county in respect of size, being exceeded only by Yorkshire and Lincolnshire, and the fourth, in respect of population, being exceeded by Yorkshire, Middlesex, and Lancashire. Exeter, the capital, is 160 miles from London in a straight line W.S.W.; 164½ miles by the shortest road, through Staines, Basingstoke, Andover, Amesbury, Mere, Wincaunton, Ilminster, and Honiton; 173 miles by the Exeter mail-road, through Staines, Andover, Salisbury, Shaftesbury, Yeovil, Crewkerne, Chard, and Honiton; 176 by the Penzance and Falmouth mail-road, through Salisbury, Blandford, Dorchester, Bridport, and Honiton: or 193 miles by the Devonport and Plymouth mail-road, through Reading, Devizes, Bath, Wells, Bridgewater, Taunton, and Collumpton.

Coast-Line, Islands.—The coast of the Bristol channel which bounds Devonshire to the north and north-west is for the most part steep and rocky. On the side towards Somersetshire, the coast-line runs nearly east and west for about 22 miles, measured in a straight line from the border of Somersetshire to Bull Point, west of Ilfracombe; along one part of this line there are cliffs, in the other parts the coast, though steep, is not broken or precipitous: there are no marked headlands. From Bull point to Morte point (distant a mile and a half south-west) the coast forms a small bay (Rockham bay) bounded by cliffs; from Morte point to Baggy point, distant three miles and a half south by west, it forms a larger and deeper bay (Morte Bay), with cliffs at each extremity and a low shelving beach in the middle. From Baggy point to Hartland point (distant 14 or 15 miles south-west) the coast forms the deep bay, Barnstaple or Bideford Bay, into which the united stream of the Torridge and the Taw empties itself. From Baggy point to the æstuary of the Taw and Torridge, except near Baggy Point, the coast is shelving and sandy, with a multitude of sand-hills, called Braunton barrows; from the æstuary of the rivers to Hartland point the coast is lined with steep cliffs and rocks. From Hartland point the coast, still lined with cliffs, runs south or south by west for about eight miles to the border of Cornwall. This coast presents, in several places, very picturesque views, especially about Lymouth, or Lynmouth (the mouth of the river Lynn), on the border towards Somersetshire, and at Clovelly, in Bideford Bay.

The coast of the English channel, which bounds the county on the south, runs W.S.W. from the neighbourhood of Lyme Regis (in Dorsetshire), 22 miles measured in a direct line, to the mouth of the river Ex. This coast is lined with cliffs throughout its whole extent, and is marked by one headland, Beer Head, at the western extremity of Seaton Bay. The rivers Axe and Otter enter the sea in the course of this line. From the mouth of the Ex the coast, lined with cliffs, runs S.S.W. six miles to the mouth of the Teign, and from thence five miles south or south by east to the headland called Hope's Nose, at the northern extremity of Tor Bay. Tor Bay is a deep bay bounded on the south by Berry head (distant about five miles from Hope's Nose), having a shelving beach at the bottom of the bay, interrupted by a bluff headland (Roundham Head), and an abrupt coast towards each extremity. Tor Bay is memorable as the place in which William prince of Orange, afterwards William III., landed at the Revolution of 1688. Berry head appears to have been the Promontorium Hellenis of the antients (Richard of Cirencester). From Berry head the coast, still possessing the same bluff character, runs S.S.W. five or six miles to the mouth of the Dart, from thence to the Start point, nine miles further; it forms a wide shallow bay (Start bay), lined with a high sandy beach (Slapton sands) that intercepts the flow of the waters which descend from the interior toward the sea, and has formed a lagoon (Slapton Lee) similar to the étangs of Gascogne or Languedoc. From Start point a high rocky coast runs W.S.W. four miles to Prawle point, the southern extremity of the county, and thence three miles west by north across the wide æstuary of the Kingsbridge river to Bolt Head (430 feet high), and thence four or five miles further in the same direction to Bolt Tail. From Bolt Tail the coast, still for the most part lined with cliffs, runs W.N.W. to the entrance of Plymouth Sound, distant 12 miles in a straight line from Bolt Tail. This interval is partly occupied by the wide and shallow Bigbury bay, into which the rivers Avon or Aune and Erme flow, and by the mouth of the river Yealm. About two or three miles of coast on the west side of Plymouth sound belong to Devonshire. Plymouth sound is three miles wide and extends many miles inward. It receives from the north-west the Tamer (united with the Lynher or St. German's river), upon the æstuary of which, called Hamoaze, is the town of Devonport, formerly 'Dock,' the royal dock-yard of which ranks next in importance to that of Portsmouth; and from the north-east the Plym, the æstuary of which is called Catwater. Mill bay and Sutton pool are small inlets at the bottom of Plymouth sound; the latter is almost encircled by the town of Plymouth. Plymouth sound, with the æstuaries of the streams that run into it, forms one of the finest harbours in Great Britain for extent and safety. It is secured from the heavy swell, which formerly set into it, by a breakwater, nearly a mile long, which extends across the middle of the sound. [PLYMOUTH.]

The Devonshire coast may be estimated at from 155 to 160 miles; 55 to 60 miles on the Bristol channel and about 100 miles on the English channel.

Lundy Island, in the Bristol channel, 10 to 11 miles N.N.W. of Hartland point, is a mass of granite two miles and a half long from north to south and about a mile from east to west. Its area is about 900 to 1100 acres. It is surrounded on every side with rocks; the landing-place, up which two men can scarcely walk abreast, is on the eastern side. The southern point is occupied by a light-house. Rat Island is a rocky detachment from Lundy Island on the south-east or south. The northern part of Lundy Island rises considerably above the level of the sea, the highest part being 200 feet high. Several brooks flow from the higher ground into the sea. Considerable plantations have been formed on the island, but the trees are too exposed to keen north-easterly winds to flourish; in the south part of the island the soil is said to be pretty good. There is an abundance of puffins and rabbits, and the island is much infested with rats. Of the number of inhabitants we have no account: they must be very few; for in 1794 there were seven houses and 23 inhabitants, and in 1822 only two houses beside the residence of the light-house keeper. Their principal business is shooting rabbits for their skins, and puffins for their feathers. There are the remains of a fort with a few dismounted guns commanding the landing-place· also the ruins of a chapel, dedicated to St. Ann. St. Nicholas Island is in Plymouth sound: it is fortified.

Surface, Hydrography.—Devonshire is more uniformly hilly than any other of the large counties of England. The principal ranges of hills may be considered as offsets from the elevated districts of Dartmoor, Exmoor, and Blackdown. Dartmoor is a granitic table-land, having its greatest elevation towards the north, and containing the highest ground in Devonshire. Cawsand or Cawsorn hill, in the northern part of the forest, is 1792 feet high: Rippon Tor, four or five miles north of Ashburton, 1549 feet: Butterton hill, in the south part of the forest, 1203 feet: the head of the river Erme 1131 feet; and the site of Hareford or Harford church, also near Butterton, 658 feet. These heights are from the Ordnance Survey, except the last, which is given on the authority of Dr. Berger.

Dartmoor extends nearly 22 miles from north to south (from Belston, near Oakhampton, to the Plymouth road between the rivers Erme and Avon or Aune); and 14 miles from east to west, from the neighbourhood of Moreton Hampstead to that of Tavistock. This immense waste is thus described by Dr. Berger (*Geol. Trans.*, vol. i., p. 119): 'From Harford church (near the southern limit of Dartmoor) the country assumes quite a bare and alpine appearance, presenting a vast plain, extending beyond the visible horizon. The face of the country is formed by swellings and undulations gradually overtopping each other, without ever forming distinct mountains. There is neither vegetation nor any human dwelling; we tread upon a boggy soil of very little depth, and scarcely affording sufficient food to support some dwarf colts as wild as the country they inhabit.' The area of Dartmoor forest has been estimated at 80,000 (Fraser, *Agric. Report*) or 100,000 acres. Part of the waste is appropriated by the surrounding parishes, the freeholders of which possess the right of common, or as it is termed the right of *venville*, on these appropriated parts. The rest of Dartmoor, to which the name of Dartmoor forest (frequently given to the whole waste) strictly applies, and which belongs to the duchy of Cornwall, has been found by survey to contain 53,644 acres. It was on this part that the prison was built during the last war for the prisoners of war. The highest part of Dartmoor forest, in which some of the most important rivers of the county (the Taw, the Dart, the Teign, &c.) have their rise, consists of a succession of morasses formed by the decay of the successive crops of aquatic plants, with which this part teems: these morasses are in some parts 40 to 50 feet deep, in others not more than 5. In several places there have been land-slips, owing to the over-accumulation of marshy soil: these slips would be more frequent but for the granite rocks or 'tors' which continually rise to the surface. Peat is dug in this forest; and many sheep pastured there in summer, and some all the year round. The elevation of Dartmoor forest causes it to have a much lower average temperature than other parts of the county. The average difference of the temperature at Ilfracombe, on the north coast of the county, and Oakhampton, just on the northern border of Dartmoor, is 10° 5′ of Fahrenheit: in summer the difference is small, but in winter it rises to 16° or 18°. (Vancouver's *Agric. Survey.*) Amicombe hill, Okement hill, and others, are elevated parts of Dartmoor. Brent Tor (802 feet, according to Dr. Berger,) and Blackdown, both near Tavistock, border upon Dartmoor, but are not composed of granite.

Dartmoor has been described as an elevated plain: the descent to the lower country all round is rapid. With the exception of Blackdown, there is no eminence near it which comes within 800 or 900 feet of its highest point. From Dartmoor several ranges of hills, composed chiefly of rocks of the transition series, branch off; one from the north-west part of it, near Oakhampton, runs in the direction of Hartland point, dividing the basin of the Tamer from that of the Torridge, and sending out branches which separate the valleys of the various feeders of the Tamer. This range has no remarkable elevations: part of it, with one of its branches, has the name of Broadbury. Another branch running northwards separates the valley of the Okement, and afterwards of the Torridge, from that of the Taw, and terminates near the junction of these last two rivers. Another branch runs eastward towards Exeter, turns to the south-south-east near that city, and separates the valleys of the Ex and the Teign. Little Haldon, in this range, near its termination, has an elevation of 818 feet. A branch which this range sends off soon after leaving Dartmoor, runs north-eastward, separates the basin of the Ex from that of the Taw, and connects the heights of Dartmoor with those of Exmoor. Another range running south-east from Dartmoor separates the valleys of the Teign and the Dart: Furland hill, in this range between Brixham and Dartmouth, is 589 feet high.

Exmoor is a tract of high land, having its greatest elevation towards the north. It is composed of rocks of the transition class, and is chiefly included in Somersetshire, but extends into the north and north-east parts of Devon. Its highest point, Dunkerry beacon, Somersetshire, attains to the height of 1668 feet, according to the Ordnance Survey, or according to another measurement, 1784 feet. A range of hills extends from Exmoor along the north coast of Devonshire to Morte Bay; some of the summits are probably 1000 feet high: the village of Linton on this range, at the mouth of the river Lynn, is 428 feet high. The ridges of Exmoor forest and the branches which it sends off towards the south separate the valleys of the upper waters of the Ex.

A third system of hills consists of Blackdown, in the eastern part of the county, on the border of Somersetshire, between Taunton and Honiton; and of the ranges of hills which it sends off, chiefly to the southward, separating the basin of the Otter from those of the Ex on one side, and the Axe on the other, and dividing from each other the valleys watered by the several affluents of the Otter and the Axe. Dumpdon hill, north-west of Honiton, is 879 feet high. These hills have flat tabular summits; their steeper side is toward the west. [CRETACEOUS GROUP.]

Rivers.—The rivers of Devonshire are numerous, and some of them important. The Ex rises in Exmoor, in Somersetshire, and flows south-east past the villages of Exford and Winford to Exton, where it turns to the south, and reaches the border of Devonshire about 18 or 19 miles from its source. For about two miles it divides Devonshire from Somersetshire, being joined in this part by the river Barle, which also rises in Exmoor, and has a south-east course of 22 to 24 miles through Somersetshire before it falls into the Ex. A little below the junction of the Barle, the Ex enters Devonshire, and flows in a southerly direction, but with a very circuitous course, to Tiverton (about 10 or 11 miles), receiving in its way several feeders, of which the chief are the Batham (9 or 10 miles long), which flows from the border of Somersetshire past Bampton, and falls into the Ex on its left or eastern bank; and the Loman (8 or 10 miles long), which flows from the hills on the Somersetshire border, near Bampton, and joins the Ex on its left bank at Tiverton. From Tiverton the Ex flows still southward, 13 miles, to the junction of the Culm, receiving by the way, on its right bank, the Dart (8 miles long) from the moors between Tiverton and South Molton; and about 2 miles lower down, on its right bank, the Creedy (16 miles long), which passes near Crediton, and is joined by the Yeo (12 or 13 miles long) below that town. From the junction of the Creedy the Ex flows between 2 and 3 miles southward to Exeter, and then about 5 miles south-east to Topsham, where it receives the Clist, 16 or 18 miles long: just above Topsham, the Ex becomes a tide river. The tideway of it is about 5 miles long (or 7 by the low-water channel), and about a mile wide at high water. A sand-bank, dry at low water, divides its mouth into two channels. The whole length of the Ex is from 57 to 60 miles. A canal, formed in the reign of Henry VIII., runs by the side of this river between Exeter and Topsham: this canal was originally more than 3 miles long, and it has been lately lengthened so as to enter the tideway lower down. By this canal and the tideway of the river, vessels can get up to Exeter, above which the river is not navigable.

The Culm, mentioned above, rises in the Blackdown hills, just within the border of Somersetshire, and flows 11 miles westward to the village of Uffculm; from thence 5 miles south-west to the town of Collumpton or Cullumpton, and from thence for 10 miles south-west (26 miles in all) into the Ex.

The Torridge rises on the border of Devonshire and Cornwall, near the head of the Tamer [CORNWALL], and flows eastward about 7 miles to the neighbourhood of the villages of East and West Putford; it then turns to the south-east, and runs 8 or 9 miles to Bradford Mill, where it receives the Waldon (12 miles long) on its right bank. From Bradford Mill it runs eastward 9 miles past Sheepwash or Shipwash to the junction of the stream (10 or 12 miles long) which passes Hatherleigh; and thence 1½ mile north-east to the junction of the Okement, which is formed of two brooks (East and West Okement) that rise on Dartmoor and unite at Oakhampton, and has a northward course of 18 to 20 miles. From the junction of the Okement the Torridge has a very sinuous course of 25 or 26 miles in a north-west direction, past Torrington to Bideford, where it becomes a tide river. The tideway from Bideford to Appledore, where the Torridge and the Taw unite, is 3 miles, making the whole course of the Torridge 53 to 56 miles. The Torridge is navigable for vessels up to Bideford, and for boats to Wear Giffard, 4 or 5 miles higher up.

The Taw rises on Dartmoor, on the slope of the same hill (Okement Hill) from which the East and West Okement rise, and has a northward course of 17 or 18 miles to below the mill and village of Brushford: from thence it has a winding course of nearly 7 miles in a north-north-west direction to the junction of the Little Dart (16 or 18 miles long), which rises in the range of hills connecting Dartmoor with Exmoor, and flows westward past Chumleigh into the Taw. From the junction of the Little Dart, the Taw flows northward 3 miles to the junction of the Mole (20 miles long), which rises on North Molton ridge, Exmoor, on the border of Devonshire and Somersetshire, passes North and South Molton, and after receiving the Bray (14 miles long), which also rises on Exmoor, joins the Taw on its right bank. After the junction of the Mole, the Taw flows north-north-west 16 miles to Barnstaple, where it becomes a tide river. The tideway is about 5 miles in length from Barnstaple to the junction of the Torridge, making the length of the Taw nearly 50 miles. It is navigable for small vessels up to Barnstaple, and for boats to New Bridge, 3 or 4 miles higher. The æstuary of the united rivers Taw and Torridge is not 2 miles long.

The Dart rises on Dartmoor. The head of the East Dart, which may be considered as the true head, is on the southern slope of Okement hill, near the springs of the Okement and the Taw. It flows 10 miles south-east to the junction of the West Dart (9 miles long) at Dartmeet Bridge, between Ashburton and Tavistock. From Dartmeet Bridge the river flows south-east 30 miles past Buckfastleigh and Totness, to its outfall just below Dartmouth. Its whole course is thus about 40 miles. The tide flows up to Totness 10 or 11 miles from the mouth of the river: above this place the river is not navigable. The navigation is chiefly used to convey coal and shelly-sand manure to Totness and the neighbourhood, and to export the produce of the tin, lead, and copper mines, worked on the border of Dartmoor Forest. The entrance to the river forms a good harbour.

The Teign (the North Teign) rises on Dartmoor near the head of the Dart, and after flowing three or four miles to the north, turns eastward, and flows about 14 miles to Dunsford, between Exeter and Moreton Hampstead. It then runs south about 12 or 13 miles, near Chudleigh, receiving by the way the West Teign or Bovey river (15 miles long) from North Bovey, to the neighbourhood of Newton Bushel and Newton Abbot; below Newton Bushel it has an eastward course of five miles (chiefly tideway) into the sea at Teignmouth. Its whole course is about 35 miles: it is navigable up to Newton Bushel, five miles from the mouth.

The Otter rises on the southern slope of Blackdown, near the village of Otterford, and flows south-south-west about 25 miles, past Honiton, Ottery St. Mary, and Otterton, into the sea about five miles east of the mouth of the Ex. It is not navigable, and has no tributary worthy of note. The Axe rises in Dorsetshire, not far from Beaminster, and has a circuitous course (north-west, west, and south-west) of 16 miles, through Dorsetshire, Somersetshire, and Devonshire, to Axminster. Below Axminster it flows 7 or 8 miles south-south-west into the sea at Axmouth, receiving the Yart (12 or 13 miles long) from the hills adjacent to Blackdown.

The Avon or Aune, the Erme, and the Yealm rise on the southern side of Dartmoor, and flow southward into the sea between Plymouth Sound and Bolt head. They are respectively 22, 15, and 14 miles long. The Aune and the Yealm have each a navigable tideway of three miles, the Erme of two miles. The Plym rises near the Erme, and flows south-south-west 16 or 17 miles into Plymouth Sound at Plymouth. Its tideway 'Catwater' is three miles long.

The Tamer, which divides Cornwall from Devonshire, has been already described. [Cornwall.] Its principal Devonshire feeders are the Deer (9 miles long), which flows past Holsworthy; the Carey (13 miles long), and the Lyd (13 miles long), which rises on Dartmoor; both these join the Tamer near Launceston; and the Tavy or Tay (26 or 28 miles long), which rises on Dartmoor, and flows past Tavistock. The Tavy joins the tideway of the Tamer, and has itself a tideway of more than three miles. The Lew Water (nine miles long) and the Thistle Brook (10 or 11 miles long) are feeders of the Lyd; and the Wallcomb (13 miles long) is a feeder of the Tavy. There is a picturesque fall in the Lyd, near Lidford, four or five miles from its source.

The other rivers of the county are too small to require particular notice. It will suffice to mention the Lynn (10 miles long) on the north coast, and the Sid (6 miles long) on the south coast. Salcombe harbour, between Bolt head and Prawle Point, is the æstuary of several small streams, to which the maps do not assign a name. This æstuary is navigable up to Kingsbridge four miles from the mouth.

Canals.—The Bude and Holsworthy canal, with which is connected the Bude and Launceston canal, enters this county from Cornwall, near the head of the Tamer, and proceeds in a very circuitous course of more than 15½ miles to Thornbury on the river Waldon, one of the feeders of the Torridge, where the canal terminates. It has two inclined planes in Devonshire and two in Cornwall: part of its course is through a tunnel. The chief purposes of this canal are to facilitate the importation of Welsh coal, and to convey shelly sand from the coast to the interior for manure. In Nichols' and Co.'s Map of Canals, one is marked as extending from Torrington along the valley of the Torridge for about four miles, and opening into that river at Wear Giffard, between Torrington and Bideford, where the navigation of the river begins. The Stover or Teigngrace canal is connected with the Teign at Newton Bushel, and extends about four miles up the valley of that river toward Bovey Tracey: it serves for the importation of coal, culm, sea-sand, and lime; and the exportation of Bovey coal, pipe-clay, and potters' clay. The Tavistock canal extends four miles from Tavistock to the tideway of the Tamer; it has a tunnel one mile and a half long, and a branch two miles long, to Millhill slate-quarries. The Exeter canal has been noticed. Two important canals have been projected, 'the Grand Western Canal' (Acts obtained A.D. 1796, 1811, 1812), from Taunton in Somersetshire, by the valleys of the Tone, the Culm, and the Clist, to Topsham; with branches to Tiverton and Collumpton; and 'the English and Bristol Channels Ship Canal' (Act obtained A.D. 1825), from Bridgewater Bay to Beer Road in Seaton Bay at the mouth of the Axe, crossing the eastern extremity of Devonshire by the valley of the Axe.

There is a railroad from Dartmoor, near the prison originally built for prisoners of war, to the river Plym near Plymouth: a branch from Catdown and Sutton Pool, close to Plymouth, joins this railroad at its termination on the Plym. The length of the railroad and branch together is about 25½ miles. Another railroad, 8 miles long, formed of granite blocks, extends from the Haytor quarries to the Teigngrace canal. Railways have been projected between Bristol and Exeter, passing by Axminster, Taunton, Bridgewater, &c.; and between Exeter and the Southampton railway at Basingstoke, Hants. An act of parliament has been obtained for the former of these.

There are no less than four roads between London and Exeter traversed by the mails. The Devonport, Exeter and Bath mail-road enters this county between Wellington and Collumpton, and passes south-west through Bradninch to Exeter, and from thence by Chudleigh, Newton, and Totnes to Devonport. The Exeter mail-road enters Devonshire between Chard and Honiton, from which place it runs to Exeter. The Penzance, Falmouth, and Exeter mail-road enters Devonshire between Bridport and Axminster, and proceeds by the latter town and Honiton to Exeter, and from thence by Oakhampton, skirting the north side of Dartmoor, to Poulston Bridge, where it crosses the Tamer into Cornwall. The Falmouth, Devonport, and Exeter mail-road enters the county between Ilminster and Honiton and runs to Exeter, and from thence by Chudleigh and Ashburton to Plymouth and Devonport, and from whence the mail is conveyed across the æstuary of the Tamer into Cornwall. A mail-road from Bristol to Bideford enters Devonshire between Wiveliscombe and Bampton, and runs by South Molton and Barnstaple to Bideford. A road from Exeter runs by Crediton and Chumleigh to Barnstaple, and from thence by one branch to Ilfracombe, and by another to Combe Martin. From this road, at or near Crediton, are branches to Tiverton and Bampton and South Molton on the one hand, and to Oakhampton on the other; and between Chumleigh and Barnstaple another road branches off to Bideford, Clovelly, and Hartland. Besides the mail-road from Exeter to Plymouth, there is a road through Moreton Hampstead, and over Dartmoor. A road from Ashburton leads to Tavistock over Dartmoor.

Geological Structure.—A few spots occur in the eastern portion of the county and along the coast between Sidmouth and the border of Dorsetshire, which are occupied by outlying portions of the chalk formation. The sections of these portions on the coast present the last chalk cliffs toward the west. In the cliffs eastward of the Axe, the chalk does not occupy the whole cliff but only the upper portion: the central part of the cliff is composed of green-sand, and the lower part of the lias: for the chalk and green-sand in their extension westward overlie the other formations, which elsewhere are found beneath them and rest immediately upon the lias. Westward of the Axe, where the chalk cliffs reappear, the chalk dips rapidly towards the west: a portion of the upper part of the cliff has been detached and has subsided toward the beach, the shattered mass of chalk exhibiting a variety of picturesque forms.

The green-sand formation presents on the confines of Dorset and Devon many outlying masses forming considerable hills. To this formation belong the flat-topped hills of Blackdown, the range connected with them which separates the valleys of the Otter and the Axe, and the branches of this range which separate the smaller valleys watered by the tributaries of the Axe (the Yart, the Coly, &c.) and by the Sid. A range extending westward from the Blackdown hills, and bounding the valley of the Culm on the north, also belongs to the green-sand formation: and beyond Exeter the range of the Haldon hills, divided only by the valley of the Teign from the granite of Dartmoor, is capped by green-sand; thus affording a remarkable instance of the approximation of primitive rocks and those of much later formation. The green-sand heights in Devonshire are for the most part in the state of unreclaimed heath. [Cretaceous Group.]

On the eastern side of the Blackdown and connected ranges, the green-sand rests upon lias, the lowest of the oolitic series of formations. Lias occupies the valley of the Axe above Axminster, and the upper part of the valley of the Yart. On the western and southern sides of Blackdown the green-sand overlies all the oolitic formations, and rests immediately upon the red marle, which, with the accompanying sandstone and conglomerate, constituting the formation designated the new red sandstone, occupies the tract from the Blackdown hills westward to the valley of the Loman and the Ex: it constitutes the bed of the Loman, but extends not quite to the bank of the Ex, which flows for the most part over a bed of transition rocks. Between Silverton and Exeter the red marle is found extending westward across the Ex and the Creedy, and along the valley of the Yeo, nearly to the valley of the Taw. It extends southward from the Blackdown hills along the valley of the Otter and across the country between the Otter and the Ex to the coast; crosses the Ex immediately below Exeter, and extends along the coast with some interval to Torbay: it forms the valley of the Sid and the Coly, and the lower part of the valleys of the Axe and the Yart. The green-sand which caps the Haldon hills rests chiefly on this formation. Between Exeter and the village of Exminster the layers of red and white sand in this formation are strangely intermixed. The conglomerate which belongs to it is quarried for building at Heavitree, near Exeter. In the vicinity of Exeter, and in other places near the junction of the sandstone and transition districts, there is found amygdaloidal trap interposed between the sandstone beds.

The district occupied by the various formations enumerated above is small, compared with that which consists of the rocks of the transition class. These occupy all the county northward and westward of the new red sandstone, except the primitive district of Dartmoor. The western side of Great Haldon (green-sand) rests upon the transition rocks. These transition rocks consist of an argillaceous slate, which in the neighbourhood of Dartmoor does not attain to an average elevation of more than 500 feet; except on the western flank of the moor, where it forms a steep eminence of more than 1100 feet. In the north of Devon it rises considerably higher, and the heights of Exmoor (which are in some parts 1800 feet high) consist of it. In this part of the county the rocks which compose the formation differ materially in their mineralogical characters: they have for the most part the structure of sandstones, and are essentially composed of quartz and clay, but in different proportions; quartz predominating in the coarser and clay in the finer grained varieties: these last graduate into a fine slate, the laminæ of which are as thin as paper. The strata of greywacke near Clovelly incline in every direction, and describe the most capricious and picturesque forms. The undulating surface of the country may be partly ascribed to the predominance of the argillaceous slate, which is, of all the rocks of earlier formation, the most subject to decomposition. These slate rocks are quarried for roofing-slates: they are metalliferous, affording ironstone; and veins of tin, copper, and lead: the veins or lodes which yield tin or copper run, as in Cornwall, from N.E. to S.W. (approaching more or less to E. and W.), and those which afford lead run nearly at right angles to these. The strata in the mining field about Tavistock which yields tin, copper, lead, and manganese, are traversed by porphyritic (elvan) beds, bearing nearly east and west. A few lead and copper mines are wrought in North Devon: the lead is combined with silver. In many parts of the transition district, beds of limestone and masses of greenstone occur. The limestone rocks in the vicinity of Plymouth, Tor Bay, Ashburton, Newton Bushel, and Chudleigh, as containing organic remains and alternating with argillaceous slate, may be referred to the transition series: the limestone is quarried for building and burnt for manure: beautifully veined marble is worked in different places. The limestone of the north of Devon which crosses the county in parallel courses E. and W., is referable to the same series. The greenstone occurs in various parts of the slate district on the northern and western sides of Dartmoor: and detached portions of amygdaloidal trap, observed in many situations round Dartmoor, may probably be referred to this formation.

It is in the transition district that the imperfect coal or lignite, called Bovey coal, is found. It occurs at Bovey Heathfield, on the right or S.W. bank of the West Teign or Bovey river in a plain where the strata of it rise to the surface. It lies in parallel seams from four to sixteen feet thick, at six or eight feet distance from each other, to the depth of sixty feet, and exhibits a gradation from the most perfect ligneous texture to a substance nearly approaching the character of pit coal. Potters' clay and pipe clay are found in the same neighbourhood. These various substances are of a later formation, and are deposited with intermingled beds in a basin formed of older rocks. The Bovey coal is used for fuel in the potteries on Bovey heath, and by the poorer people of the neighbourhood: but its difficult and imperfect combustion, and fetid gas, render it unfit for domestic use.

Granite forms the mass of Dartmoor. Numerous rifted rocks called tors, are scattered over the surface of this moor: they appear to occupy their primitive sites and to owe their present figure to the resistance which their more perfect crystallization has enabled them to offer to the influence of the atmosphere. The Dartmoor granite is remarkable for the size of the felspar crystals which it contains: it is much valued for its durability, fineness of texture, and the size of the blocks; it is quarried and exported to a considerable extent, especially to London. It is metalliferous; containing veins of tin, and even the rock itself being sometimes impregnated with this metal. (Conybeare and Phillip's *Outlines of the Geology of England and Wales*; *Geological Trans.* vol. i.; Lysons's *Magna Britannia*; *Physical and Political Geog. of the Brit. Isles in the Library of Useful Knowledge*.)

Agriculture.—The lower hills which occupy so large a part of the surface of this county are covered with grass; the higher with moor and rock. The county contains along its numerous rivers many fertile meadows, some of which are only imperfectly irrigated, and others not at all. Grass seems to be the natural produce of a mild moist climate, like that of Devonshire, in which corn is everywhere a secondary object. The improvements in the cultivation of arable land which have been rapidly introduced into other counties, especially in the north, have not been so favourably received in Devonshire. The oldest system of Devonshire cultivation is a rude species of convertible husbandry, very different from what is called by that name in the north of England and south of Scotland. When grass land begins to wear out by injudicious management, or from a natural defect in the soil, the surface is pared thin, and the sod when dried is burnt in heaps. The ashes thus produced stimulate the soil and enable it to bear a few crops, frequently three corn crops in succession. When the land is thus nearly exhausted, it is laid down again in grass without much care, and is pastured for eight or nine years, when the same process is repeated. This system is so common in Devonshire, that the operation of paring and burning is frequently called *Devonshiring*, or contracted, *Denshiring*. Opinions differ very much on this practice. There are soils and situations where burning may be extremely useful, by improving the texture of the soil, and destroying weeds and insects; and the practical result proves that it has its advantages. But in other circumstances the burning does harm, and reduces the soil to a state of great sterility, after having stimulated it to produce one or two crops. It is becoming less common every year, and there is no doubt but in due time it will be confined to land abounding in vegetable matter in that state in which it is not fertile, as in peat or turf.

The soil of Devonshire consists of the substance of the rocks of which the hills are composed, which are granite, grauwacke, red sandstone and slate, and marble. The decomposed slate gives the argillaceous part, which binds the silicious and calcareous sand produced from the other rocks. The waters have mixed these substances in every proportion; but the best and most fertile soils are composed of a mixture in the proportions which form a good sound loam very favourable to the growth of wheat and of potatoes. A great part of North Devon is above mediocrity as to fertility; and portions of the southern part of the county are highly productive. Considerable wastes and heaths have been gradually brought into cultivation; and although many wastes and commons still remain, and there are extensive moors and bogs scarcely susceptible of improvement, the quantity of land which is productive in grass or corn is very considerable for so hilly a country. The grass land occupies more than four-fifths of the soil under cultivation. Where an improved system of husbandry has been introduced, chiefly by resident proprietors, a regular course of crops is adopted; but the old Devonshire farmer takes three, or at least two corn crops after breaking up a pasture, and a small portion of turnips or potatoes, and has no regular rotation. After the surface is pared and burnt, lime is used for manure, and earth from banks and hedge rows, mixed with the ashes. For turnips and potatoes farm-yard dung is used. When the sod is not burnt, the land is ploughed up in autumn or in spring, cross-ploughed in May or June, then cleared of weeds which are burnt, and then limed and manured: thus a tolerable preparation for wheat is produced. In some situations where shelly sea-sand can be procured, it makes an excellent dressing for the land: 160 horse loads, or *seams*, as they are called, of 2½ cwt. each, are mixed with 40 or 50 bushels of lime for an acre. When the soil is strong, and the land is ploughed from a state of pasture for immediate sowing with wheat, the seed is frequently covered by the hack, a kind of heavy hoe like a shipwright's adze. The furrow-slices are laid on edge in ploughing, and the wheat falls in between them; the hacking fills up the intervals, and the wheat comes up in regular rows. This is a very old mode of cultivation, and common in different parts of the Continent. If the land has been well prepared, it is a method of covering the seed preferable to harrowing it in, but it is more expensive. The practice of shovelling out the intervals between the stitches to cover the seed with the earth taken out, is common and much to be commended.

The rapid growth of weeds in the climate of Devonshire renders all the corn crops very foul, even after a good fallow. This should have pointed out the advantage of the row culture, which admits of hoeing the crops; but drilling is not yet introduced to any extent. Great expense is bestowed in hand weeding, where attention is paid to having clean crops: where this is neglected, the return is much below what might be expected from the soil.

Some of the lands on the hills are so steep that the crop must be brought home upon horses, who carry a pack-saddle with large hooks on each side, in which the sheaves are laid. A horse so loaded looks at a distance like a little moving stack, being almost entirely covered with sheaves.

A considerable quantity of potatoes are raised in Devonshire and sent to London, where they obtain good prices. They were formerly planted in lazy-beds, as in Ireland, but the superior method of single rows moulded up is now very generally adopted. The rich brown loam on a rocky subsoil, which gives a dry sound bottom, especially if it has been for some time in grass, whether pared and burnt, or only ploughed and well worked, produces an abundant crop of very good potatoes. An acre well cultivated and manured will give from 300 to 400 bushels of potatoes for twenty planted.

Grass land being far more abundant in Devonshire than arable, butter, cheese, and live stock may be considered as the chief agricultural produce for exportation. The finest and richest meadows are situated on the alluvial borders of the principal rivers. These ought never to be ploughed up, although this is sometimes done, especially near the end of a lease, if not prevented by a restrictive clause. When such lands are ploughed, sudden floods sometimes destroy the crops, and carry off the finest particles of the soil. Where the meadows are irrigated they are worth from 2*l.* to 3*l.* per acre, and will produce two tons of hay per acre after having been fed off till May-day. The upland meadows are less productive, and require occasional manuring. They will produce from 20 to 30 cwt. of superior hay for horses by being shut up in March. The rent of these is from 30*s.* to 40*s.* per acre. The average quality of good upland pastures, whether of old grass or newly laid down, is such as will feed a cow of 9 stone per quarter on two acres for five months, and two sheep per acre for the remaining seven. When the land has been much exhausted by corn crops, the grass seldom continues good beyond the first or second year, when it shows the mischief that has been done by the appearance of poor weak grasses which succeed the clover and rye-grass.

The clouted cream of Devonshire is a well-known delicacy. It is made by heating the milk on the hearth, or by means of a stove, to a degree a little below the boiling point, when the clouted cream rises to the top like a thick scum, and is taken off when cooled. This cream being merely stirred briskly with the hand or a stick, is converted into butter. It is universally admitted that the butter thus produced is inferior to that which is made from the cream which has risen slowly and spontaneously, and in all the largest and best dairies in the vale of Honiton the cream is never clouted, except to be eaten in that state as a luxury.

The cows used for the dairy are almost exclusively of the breed of the county, and of a red colour. They are handsomely shaped, and some of them give much good rich milk. In general however they have too great an aptitude to become fat to be good milkers. A good Devonshire cow gives three gallons of milk a day, which will make twenty ounces of butter, for the first twenty weeks after calving: after this the milk gradually decreases, till, at the end of nine months, she goes dry. Thus the average produce per cow of a whole dairy through the year will not be more than half this quantity, even if all the cows are good, which is seldom the case. Cheese is made of skimmed milk, and is consequently inferior in quality. Where porkers are in request, as near great towns, they are profitably fattened on the skim milk, or on the whey, with the addition of meal.

A great many oxen are reared and annually exported from all parts of Devonshire, but chiefly the northern parts. About Barnstaple and South Molton the best breeds are met with. The North Devon oxen are famed for their docility and activity at work, and especially for their great aptitude to fatten. They are peculiar in form, and easily distinguished from all other breeds. The breed which resembles them most is the Sussex, but the latter are coarser in the limbs and horns, and have not that peculiar colour of the muzzle and round the eyes, which marks the North Devon breed. The cows of the pure North Devon are chiefly kept to breed; for the dairy they are improved by a cross with a short horn. Some very fine cows of a mixed breed may be seen in the neighbourhood of Exeter, and along the whole vale of the Exe, fine in the coat, horn, and bone, and short in the legs. A cow bred from a North Devon by a Yorkshire bull, produced regularly twenty-four quarts of milk per day for five months after calving, and for several years; but the milk was not quite so rich as that of the pure breed, twelve quarts producing only one pound of butter, while eight quarts of the milk of the pure Devon cow made the same quantity.

The sheep fed on the hills and wastes of this county are of a peculiar breed, with fine wool and excellent flesh. The Exmoor sheep are extremely hardy, and well adapted to cold bleak mountains. The wethers at three years old, when fatted, weigh 12 or 15lbs. per quarter, and the fleece from 4 to 7lbs. In the valleys some remarkably fine sheep of an improved breed, as far as wool and carcase are concerned, have been produced by crosses of the native sheep with the Leicester. The wet state of the low meadows is not favourable to the breeding of sheep, although they fatten rapidly on water meadow grass. The higher pastures are consequently resorted to for breeding flocks, but it requires a hardy race to withstand the wet and cold winters on the Devonshire hills; for frost is not so hurtful to lambs as continued rains. The pasture on Dartmoor Forest is very good, and the rot is almost unknown there. In order to avoid the danger of the rot, which is prevalent in the lower pastures, the sheep are often left too long exposed to the autumn rains and mists on the hills, and consequently lose much of their condition.

The following table, taken from the report of the county by Vancouver, may be interesting to the breeders of sheep.

NATIVE BREEDS.	Age of wethers, when killed, in months.	Average weight per quarter in lbs.	Average weight of fleece in lbs.	Condition of Fleece.	Comparative value of Fleece.	Rough fat in lbs.	Kidney fat in lbs.	Total inside fat.
Exmoor-horned, white legs and face, with a moderately long staple of wool, pure .	30	15	7	Yoak.	5*s.* 10*d.*	7	5	12
Dartmouth, do. do.	30	16	8	do.	6 8	8¼	6	14¼
South Devon nott, brown face and legs, long wool, pure	30	22	10	do.	8 4			
Bampton nott, white face and legs, short wool, pure . .	20	22	6¼	do.	5 5	10	7	17
	32	28	8	do.	6 8			
CROSSED BREEDS.								
Old Leicester, crossed with Bampton	24	30	10	do.	8 4			
Do. with Exmoor	36	24	6¼	do.	5 5			
New Leicester, crossed with Exmoor	24	18	6½	do.	5 0			
South Devon	20	20	8¼	do.	7 1			
Bampton	20	24	8	do.	6 8	13	8	21
Merino, crossed with Exmoor.	..	..	5	Washed.	10 0			

The race of pigs in Devonshire is very good generally; and in some districts, where care has been taken to select the best animals and cross the breeds with judgment, as fine hogs are fatted as in any part of England.

The extremely prolific nature of the pig makes it an easy task to improve the breed by selection and crossing. A very few years' careful observation will enable any intelligent farmer to keep only the most profitable breeds. In less than a year the result of any cross is known; and when a hog twelve months old, and put up to fatten for three months, pays amply for his food, the farmer may be contented with the manure for his profit. But some breeds pay more than this; and the porkers fed with the offal of a dairy, often give a profit which forms a very important item in the balance of accounts. To prove this it is only necessary to look at the account of the receipts and expenses of a dairy farm as given by the reporter, p. 233, where it will be seen that out of a profit of 88*l.* 4*s.* 9*d.*, that upon pigs alone is reckoned at 25*l.*, which is almost one-third of the whole.

The land in Devonshire is held in fee or on lease for lives. Where the owner or lessee on lives grants a lease, the tenant, according to the length of his tenure, may make improvements; but where the chief lessee has an uncertain tenure, and the land is underlet at rack rent from year to year, no improvement can be expected. The practice of letting farms at a nominal rent for three lives, or for a long term, often induces a man without much capital to offer a great price for a lease which he has not the means of making profitable by good cultivation. A lease for fourteen or twenty-one years to a man who possessed an adequate capital, at a full rent, with proper restrictions to secure good cultivation, would be more likely to improve a property, and in the end would be much more lucrative both to the landlord and the tenant.

The farm buildings in Devonshire are frequently very inconveniently situated with respect to the farm. The object seems to have been to choose a sheltered spot, without regard to the situation of the land attached to the farm.

The materials of which the buildings are constructed are stone or earth, made into a species of mortar, and formed into thick walls, which dry and harden gradually, and are called by a provincial term *cob* walls. Of this material, houses, barns, granaries, and especially garden walls are made; it is in some respects similar to the *pisé* of the south of France; but in this last no water is used, whereas the cob walls are made in a moist state, and harden by drying. If the wet is kept off by a good coat of plaster, and a projecting roof, a cob wall will last many generations.

The farms are not so extensive as in the more level parts of England; 150 to 200 acres, of which at least three-fourths are pasture, are considered a large farm. The extensive commons and wastes, where cattle can be turned out for a mere trifle, even if no common rights can be claimed, tend to increase the number of small holdings: a farm of fifty acres of grass land can maintain a great number of cattle, when they are out of it for seven months in the year.

There are also in this county many more small proprietors and lessees for ninety-nine years, which is nearly the same, than in most other parts of Britain. They are mostly frugal and industrious, and if they do not cultivate their land in the most approved manner, they at least contrive to live comfortably. This is chiefly owing to the rearing of cattle, which requires constant attention, and the eye of the master, much more than the cultivation of the soil, and in which small occupiers are generally more successful in proportion than large farmers.

The chief beverage of the Devonshire people is cider, which is here superior to any other in England. The soil on the slopes of the hills is peculiarly adapted to the growth of fruit trees, especially on a loose rocky bottom, where the roots may insinuate themselves and find moisture at all times. The fruit trees in many parts of the county give a stranger the idea of forest trees, and it is only when they are seen in blossom or covered with fruit, that an orchard could be distinguished from a wood, if it were not for the regular distance between the trees, and the grass growing under them. There are some favourite sorts of apples which have been perpetuated by grafting, at a time when it had not yet been discovered, that every variety from seed has its limited period, beyond which it cannot be continued. Most of the orchards now shew symptoms of old age, and gradually diminish in produce. A new generation of apples is much wanted, and will no doubt arise to take the place of the old. The true golden pippin and the cocagee are now nearly extinct; but many new varieties have been raised from seed, some of which may probably rival the old, if not surpass them. Another cause of the degeneracy of orchards, is the planting of young trees on the exact spot where the old trees have decayed. Although trees do not require so frequent change as herbaceous plants or shrubs, they no doubt exhaust the soil in the immediate neighbourhood of the stem, as may be perceived by examining the roots which continually spread outwards for nourishment. As a quick hedge will not grow in the bank from which an old hedge has been grubbed up, however rich and mellow the soil may appear, so a tree will not thrive on the spot where another has stood for years, unless the soil be renovated by an abundance of lime or fresh mould. Hence new orchards planted in a good deep soil where none existed before, will produce far more abundant fruit, than if the trees had been planted in old orchard grounds; and the principle of change of crop extends to trees as well as to herbs.

Devonshire was formerly no doubt well wooded, and in some places there are still fine trees, but the progress of cultivation has greatly diminished the timber, and except in sheltered situations, trees do not thrive and acquire so great a size as they seem to have done when they sheltered one another. It has also probably been found out, that the return from a closely planted wood cut down at the end of thirty, forty, or fifty years, is greater than if the trees were allowed to increase for a century or two. Coppice wood however is plentiful, most of the steep sides of hills towards the banks of the rivers being covered with this growth, which adds considerably to the beauty of the valleys. The coppice wood is generally cut when twenty years old, some few poles being left till the next cutting. The best trees survive four or five cuttings; but unless they be very fine and thriving, they are usually cut down at threescore years old. The coppice wood is used for fencing, hurdles, and hop poles, and what is unfit for this purpose is sold in faggots for fuel, if near any town, or converted into charcoal. The value of a coppice cut at twenty years old, and which has been protected from the depredations of cattle, may be from 15*l.* to 20*l.* per acre. Where a coppice is well managed, and the timber preserved, the ground may be made to produce an average rent of from 15*s.* to 20*s.* per acre.

In some parts there are extensive furze brakes, which being cut every five years for fuel, produce a very considerable return, varying according to situation from 7*l.* to 10*l.* per acre.

It is to be observed that coppice woods with a southern aspect will be two years in twenty more advanced than those facing the north. A sheltered situation will often make a still greater difference; besides the coppice in the latter situation is considerably more valuable when it is sold. The wood grown in Devonshire is chiefly oak, but beech, ash and elder are interspersed, according to the soil and situation. The sweet chesnut was probably a common tree formerly in sheltered situations in Devonshire, as the oldest buildings contain timbers of this tree. How it has been nearly extirpated it is difficult to say; but the climate of the vales seems peculiarly suited to this tree, so useful for its fruit as well as its timber. Since the late discovery of the quantity of sugar which can be extracted from the chesnut, this tree may again become an object of interest to those who form new plantations.

Trees planted on the summit of the hills in Devonshire, seldom succeed, owing to the violence of the winds; but on the slopes of the hills they thrive well, and as they ascend, they protect each other; and thus in time the tops may be covered. Where the Scotch fir and larch have been planted in sheltered situations, they thrive well.

On a general retrospect of the agriculture of Devonshire, it must be allowed to be good, and yet it is capable of much improvement. When the springs, which are abundant, shall have been collected in drains, and the water turned into channels where it may be rendered useful to turn mills or irrigate meadows, instead of injuring the arable fields; when the meadows shall have been improved by judicious cultivation, and when a better system of convertible husbandry, shall be more generally introduced; the soil and climate of Devonshire, will make it one of the first counties for producing every kind of animal and vegetable food, and the cultivation will extend to thousands of acres which now are looked upon as almost absolutely barren.

The principal fairs in this county are:—Ashburton, June 4; August 10; November 11. Axminster, April 25; Wednesday after June 24. Bampton, Wednesday before March 25; Whit Tuesday; last Thursday in October; last Wednesday in November. Barnstaple, September 19; second Friday in December. Broad Hembury, December 11. Collumpton, first Wednesday in May; first Wednesday in November. Crediton, May 11; August 21; September 21. Chagford, March 25; May 4; September 29; October 29. Culmstock, May 21; October 1. Dodbrook, Wednesday before Palm Sunday. Exeter, third Wednesday in February; third Wednesday in May; last Wednesday in July; second Wednesday in December. Hatherleigh, May 22; June 22; September 4; November 8. Hartland, Easter Wednesday; September 25. Holdsworthy, April 27; June 10; October 2. Honiton, first Wednesday after July 19. Kingsbridge, July 20. Modbury, May 4. Moreton Hampstead, June 4; July 18; November 30. Molton, (North) Tuesday after May 11, and November 12. Molton, (South) Saturday after February 13; Saturday after March 25; Saturday before August 1; Wednesday before June 22; Wednesday after August 26; Saturday before October 10; Saturday before December 12. Oakhampton, second Monday after March 11; May 14; first Wednesday after July 5; August 5. Plymouth, February 5; last Thursday in October. Plympton, February 25; April 5; August 12. Sampford Peverel, Monday before last Wednesday in April; first Thursday in July. Tawton, third Friday in April; November 3; December 11. Tavistock, January 17; May 6; October 10; December 11. Thorncombe, Easter Tuesday. Tiverton, second Tuesday after Trinity Sunday; September 29. Torrington, May 4; July 5; October 10. Totness, May 12; July 25; October 28. Uffculm, first Wednesday before Easter; August 12.

Divisions, Towns, &c.—In the Exon Domesday*, mention is made of at least thirty-eight hundreds into which Devonshire was then divided. In the hundred roll, a document of the time of Edward I., thirty-three hundreds (including that of Lovetot, incidentally mentioned as co-extensive with the manor of Fremington) are noticed. The present number is thirty-three. We give these three lists in a tabular form, placing in a line the name of the hundreds which are mentioned in more than one of the lists, and of those which, though mentioned by different names, are supposed nearly or quite to coincide.

Exon Domesday.	Hundred Roll.	Modern Name, Situation, Area, and Population in 1831.
Alleridge	Harridge	Hayridge, E. and Central, 44,890 acres, 13,444 inhabitants.
Axemeninstre	Axeministre	Axminster, E., 51,930 acres, 13,939 inh.
Axemuda	Axemne	Axemouth, united with Axminster; the united hundred was formerly called Axminster and Axmouth, now Axminster only.
Badentone	Baunton	Bampton, N.E., 29,430 acres, 7000 inh.
Brauntone	Braunton	Braunton, N., 68,830 acres, 21,974 inh.
Budeleie	Buddele	East Budleigh, S.E., 50,290 acres, 20,266 inh.
Cadelintone	—	West Budleigh, Central, 16,890 acres, 3047 inh.
Carsewille	Haytorr	Haytor, S.E., 61,340 acres, 24,143 inh.
Clridiatone	Cridiaton	Crediton. Central, 34,160 acres, 12,237 inh.
Clawetone	—	—
Clistone	Cliston	Cliston, Central, 19,200 acres, 3482 inh.
—	Colrige	Coleridge, S., 50,090 acres, 20,339 inh.
Culintone	—	Colyton, E., 27,410 acres, 7374 inh.
Dippeforde	Stanburg	Stanborough, S., 61,870 acres, 14,521 inh.
Esseministre	Exminstre	Exminster, S.E., 43,740 acres, 18,232 inh.
Framintone	Fremington	Fremington, N.W., 33,350 acres, 8844 inh.
Halbreton or Hasbertone	Hanberton	Halberton, N.E., 10,090 acres, 2866 inh.
Hamioke	Hemyok	Hemiock, or Hemyock, E., 26,440 acres, 5807 inh.
Hermetone	Ermyntone	Ermington, S., 51,610 acres, 10,521 inh.
Hertesbie	—	—
Hertilande	Hertilande	Hartland, W., 30,360 acres, 4646 in.
Liftone	Lifton	Lifton, W., 136,350 acres, 13,447 inh. Lifton includes Dartmoor Forest, which contains 53,900 acres, and had in 1831 353 inh.
—	Lovetot	—
Mertone	Schefbeare	Shebbear, N. W., 79,200 acres, 20,159 inh.
Mollande	—	—
Offecolum	—	—
Otrie	—	Ottery, E., 9170 acres, 3849 inh.
Plintone	Plympton	Plympton, S., 32,230 acres, 9817 in.
Rueberge	Rouburg	Roborough, S.W., 60,170 acres, 86,430 inh. (with Plymouth.)
Scirewelle	Syrewell	Sherwell, N., 45,790 acres, 4186 inh.
Sutmoltone	Sudmoltou	South Molton, N.E., 67,930 acres, 13,825 inh.
Sulfertone	—	—
Tainbruge	Teynebrugg or Tingebrugg	Teignbridge, S.E., 59,230 acres, 14,465 inh.
Taintone	—	—
Tautone	Nortauton	North Tawton, Central, including Winkley, 65,300 acres, 13,422 in.
—	Tavystoke	Tavistock, S.W., 19,790 acres, 6954 inh.
Toritone	Blaka Toritou	Black Torrington, W., 141,600 acres, 19,492 inh.
Tulvertone, or Twertone	—	Tiverton, N.E., 23,960 acres, 10,519 inh.
Walchentone	—	—
Wenfort	Womford or Wonford	Wonford, Central and S.E., 98,770 acres, 55,661 inh. (with Exeter.)
Wetrigge. or Witric	Wyrugg, or Wytherugg	Witheridge, Central and N. E., 84,680 acres, 9567 inh.
—	Wynklegh	Winkleigh, or Winkley, Central, included in the return for North Tawton.

Clawtone hundred, in the Exon Doomsday, evidently took its name from the village of Clawton in Black Torrington hundred; Mollande from the village of Molland Botreaux in South Molton hundred; Offecolum from the town of Uffculme, or Ufculm, in Bampton hundred; Sulfertone from the village of Silverton in Hayridge hundred; Taintone either from the village of Drew's Teignton in Wonford hundred, near the upper part of the Teign, and not far from the road from Exeter to Oakhampton, or more probably from King's Teignton in Teignbridge hundred and Bishop's Teignton in Exminster hundred, both near the mouth of the Teign and not far from each other; and Walchentone from Walkhampton in Roborough hundred. The situation of Lovetot hundred has been mentioned already.

The county is divided into two parts for the purpose of parliamentary representation: each division sends two members. The divisions comprehend respectively the following hundreds:

Northern Division.—Bampton, Black Torrington, Braunton, Crediton, Fremington, Halberton, Hartland, Hayridge, Hemiock, North Tawton, Shebbear, Sherwell, South Molton, Tiverton, Winkleigh, Witheridge, West Budleigh.

Southern Division.—Axminster, Cliston, Coleridge, Colyton, East Budleigh, Ermington, Exminster, Haytor, Lifton, Ottery, Plympton, Roborough, Stanborough, Tavistock, Teignbridge, Wonford (except what is included in the city of Exeter).

Devonshire contains forty market-towns. Of the most important we subjoin a list, adding the locality of each, and the population in 1831. For further information the reader is referred to their respective articles:

Ashburton, a parliamentary borough on a small feeder of the Dart, 4165; Axminster, on the Axe, 2719; Bampton, on the Bathern, or Batham, a feeder of the Ex, 1961; Barnstaple, a parliamentary borough on the Taw, 6840; Bideford, on the Torridge, 4846; Brixham, near Berry Head, the southern extremity of Tor Bay, 5015; Dartmouth, a parliamentary borough on the Dart, 4597; Devonport, formerly called Plymouth Dock, or colloquially Dock, on the æstuary of the Tamer, near Plymouth, a parliamentary borough, population given with Plymouth; Exeter, a city, and the county town, on the Ex, 28,201; Honiton, a parliamentary borough on the Otter, 3509; Plymouth, on Plymouth Sound, a parliamentary borough, and one of the great naval ports of England, pop. including Devonport and Stonehouse, 75,534, Sidmouth, on the English Channel, 3126; Stonehouse, between Plymouth and Devonport, included in the parliamentary borough of Devonport, population given with Plymouth. [DEVONPORT.] Tavistock, a parliamentary borough on the Tavy, 5602; Tiverton, on the Ex, a parliamentary borough, 9766; Totness, a parliamentary borough on the Dart, 3442.

Of the remaining towns we shall subjoin an account here, giving them in alphabetical order.

Appledore is a port and market-town on the western side of the river Torridge, just at its junction with the Taw; it is in the parish of Northam, and in the hundred of Shebbear, 204 miles west by south of London, through Barnstaple and Bideford. It is a small place, but has a considerable coasting trade. Risdon, who compiled his survey of Devon A. D. 1605-1630, says of Appledore that it is 'a place, since our fathers' age, meanly inhabited, but at present mustereth many mansions, and may for multitude compare with some towns.' Appledore has two weekly provision markets, on Wednesday and Saturday, for the convenience of shipping. There is a chapel in the town kept in repair by the church of Windsor, but it has not been used as a place of public worship within memory: the church is at the village of Northam, above a mile from the town. The living of Northam is a vicarage, of the yearly value of 125*l.*, with a glebe-house, in the gift of the dean and chapter of Windsor. The parish contains places of worship for Independents, Baptists, and Wesleyan Methodists. The population of the parish in 1831 was 2727; that of the town of Appledore was not distinguished. The education returns from this parish in 1833 contain six infant schools with about 90 scholars; seven day-schools (one a national school of 50 boys and 30 girls, supported by an endowment and by subscription), containing in all 274 scholars; and three Sunday-schools with above 200 scholars. A parochial lending library is connected with the national school, and a lending library with one of the Sunday schools.

On the coast, near Appledore, is a sandy tract of about 800 acres, called 'Northam Burrows,' adjoining to which is a high bank of pebbles, about a mile long, resembling the Chesil-bank, near Weymouth. Kinwith, or Kenwith Castle, in besieging which Ubbo or Hubba the Dane was killed, A. D. 878, was near Appledore. Henni Borough, or Henni Castle, a small fortified spot not far from Bideford, has been supposed to be the site of this castle.

South Brent is a small town in the hundred of Stanborough, on the road from Exeter to Plymouth, and on the river Avon or Aune, twenty-six or twenty-seven miles from Exeter, and sixteen or seventeen from Plymouth. The population of the parish, which is very large (10,180 acres) was, in 1831, 1248, chiefly agricultural. The market is on Friday; and there are two fares in the year. The living is a vicarage, endowed with the great tithes, and worth 122*l*. a year, with a glebe house. The education returns for 1833 give for this parish four day-schools with about 200 children (one of these schools, containing 50 children, is endowed), and two Sunday-schools containing 100 scholars.

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* The 'Exon Domesday' contains a description of the five western counties, Wilts, Dorset, Somerset, Devon, and Cornwall; and is supposed to contain an exact transcript of the returns made by the Conqueror's commissioners at the time of the general survey from which the great 'Domesday' itself was compiled. The original is preserved among the records belonging to the Dean and Chapter of Exeter.

Chagford is in the hundred of Wonford, near the right bank of the Teign, and not far from the border of Dartmoor Forest, three and a half miles west by north of Moreton Hampstead, and fifteen or sixteen west by south of Exeter. This small town lies in a picturesque situation at the foot of some rugged and lofty hills. There is a bridge of three arches over the Teign, half a mile above the town: the church is an antient structure, and there are remains of antient chapels at Great Week and Teigncombe in the parish. The parish is large (8710 acres) and contains several hamlets: the population in 1831 was 1868, about half of whom were engaged in agriculture, and a few in the manufacture of woollens. The market is on Saturday, and there are four fairs in the year. The living is a rectory, of the yearly value of 442*l*., with a glebe house. The number of schools in the parish by the returns of 1833 was as follows: five day-schools (one partly supported by an endowment), with 190 children, and three Sunday-schools with 210 scholars. There are places of worship for Wesleyan Methodists and Calvinistic Baptists. Chagford is one of the Stannary towns. In 1643, during the great civil war, there was an action at Chagford between the Parliamentarians and the Royalists, in which the Royalists were victorious. In the latter part of the seventeenth century the town was destroyed by fire.

Chudleigh is in the hundred of Exminster, a short distance from the left bank of the Teign, and on the road from Exeter to Plymouth, between nine and ten miles from Exeter. The town, which is situated in a delightful country, chiefly consists of one long street, having the church, a small building, in which are some monuments of the Courtenay family, at its south-western extremity. There is a bridge over the Teign, nearly a mile from the town. The population of the parish, which comprehends 6230 acres, was, in 1831, 2278, of whom about a third were engaged in agriculture, and a few in manufactures, probably of woollens. The woollen manufacture was once pursued more extensively. The neighbourhood of Chudleigh is very productive in cider. There is a market on Saturday, and three fairs in the year, chiefly for cattle. There is a Dissenting meeting-house in the town. The living is a vicarage, of the yearly value of 505*l*., with a glebe house, in the gift of the parishioners, who purchased the advowson. There were in 1833 four infant schools with 91 children; six day-schools (two of them, containing 60 to 80 children, supported partly or wholly by endowment; and one, for the children of Catholic parents, partly supported by charitable contributions), containing altogether 140 to 160 children; and one Sunday-school with 93 scholars and a library attached. One of the endowed schools is a grammar-school.

The bishops of Exeter had formerly a palace at Chudleigh, of which there are some remains a quarter of a mile from the town: the manor formed part of the possessions of the see. Ugbrooke, a mile south-east of the town, now the residence of Lord Clifford, was formerly the residence of the precentor of Exeter cathedral. The park, with the adjacent pleasure grounds and plantations, occupies a space several miles in circumference; it is richly wooded, and is adorned with a large piece of water and a cascade; the house contains some good paintings by the antient masters. About half a mile from the town is 'Chudleigh Rock,' a limestone cliff celebrated for its picturesque appearance. Midway down the cliff is a cavern, the entrance to which is by a natural arch, twelve feet wide and ten feet high; according to tradition, a dog put into this cavern, which soon becomes too contracted for men to trace it, came out at a place three miles distant. Local superstition has peopled this cavern with Pixies, a minute variety of the fairy race. The limestone quarried is here considered to be of superior quality. Many persons are employed in these works.

In May, 1808, a dreadful fire broke out at Chudleigh, by which 166 houses were destroyed: the damage was estimated at 60,000*l*., and the sum of 21,000*l*. was promptly gathered by subscription for the relief of the poorer sufferers.

Chulmleigh, Chumleigh, or Chimleigh, is in the hundred of Witheridge, on the north bank of the Little Dart, just above its junction with the Taw. It is on the road from Exeter to Barnstaple, about twenty-one or twenty-two miles north-west from Exeter. It is a small town. The parish contains 8650 acres, but had in 1831 not more than 335 houses (including 1 building and 30 uninhabited) and 1573 inhabitants, more than half of them engaged in agriculture. The church, dedicated to St. Mary Magdalen, was much damaged by lightning in 1797. It contains some antient screen work. There were, in 1772, chapels at Ladywell and Cadbury, both desecrated, and some remains of chapels at Coleton, or Colleton, and Stone, all in this parish. There is one Dissenting place of worship, if not two, in the town. The manor of Chulmleigh once belonged to the Courtenays, earls of Devon, who had a castle here, of which there are no remains. In 1803 a destructive fire broke out in the town, and destroyed ninety-five houses and uninsured property to the value of 11,000*l*. The market is on Friday, but as a corn-market is almost disused; there are three fairs in the year.

The church was formerly collegiate, and has five prebends, which are not necessarily united with the rectory, though of late years they have been held by the rector. The present value of the rectory (we presume without the prebends) is 415*l*. a year. The education returns of 1833 assign to the parish five day-schools with 210 scholars; one day and Sunday-school with 20 day scholars and 13 additional on Sundays, who attend the Established Church; and two Sunday-schools, one supported by Churchmen and the other by Independents, with 120 children in each. Two of the day-schools are partially endowed, another is supported by the Independents.

Collumpton, Columpton, or Columbton, otherwise Cullompton or Cullumpton, is in Hayridge hundred, on the right or west bank of the Culm, a tributary of the Ex, and on the road from Taunton to Exeter, twelve miles north-east of Exeter. Collumpton is a town of tolerable size, having its main street along the Exeter and Taunton road, nearly a mile in length; other shorter streets branch off from this. The streets are ill-paved; but the houses are tolerably well built, some thatched and some covered with slate.

The whole number of inhabited houses in the parish, which comprehends 5790 acres, was, in 1831, 787: the number of inhabitants was 3813. About one-third of the adult males were engaged in agriculture, and about one-fourth in manufactures. There are several bridges over the Culm or the brooks which flow into it. The church, which is dedicated to the Virgin Mary, is very antient and handsome; it is in the perpendicular English style, and has an elegantly carved and gilt roof. A Gothic chapel was added by John Lane, a clothier of the town, who died in the reign of Henry VIII., and is buried in the chapel: it is a specimen of the gorgeous richness of that time. The tower of the church is 100 feet high. There are the remains of a chapel at Langford. There are meeting-houses for Independents, Baptists, Quakers, Wesleyan and Bryanite Methodists, and Presbyterians who have embraced Unitarianism. The principal manufacture is of woollen goods, as serges, kerseymeres, and a few broadcloths. The market is on Saturday for butchers' meat and other provisions, and occasionally for corn: there are two fairs in the year for cattle, cloth, &c. Petty sessions are held here: the town and the adjoining parish of Kentisbere are governed by a high constable chosen yearly, and alternately by Collumpton and Kentisbere.

The living is a vicarage of the yearly value of 351*l*. with a glebe-house, in the gift of R. B. de Beauvoir, Esq.: the church was formerly collegiate. In 1833 there were, at Columpton, a national school, supported by subscriptions, with 221 scholars (116 boys and 105 girls), and seven other day schools, with 99 boys and 96 girls; and five Sunday-schools, with 548 scholars: to one of the Sunday-schools a lending library is attached.

Colyton or Culliton is in the hundred of Colyton, and on the little river Coly, a feeder of the Axe, about twenty-two miles east of Exeter. The town is pleasantly situated, but small; the houses, many of which are antient, are principally built of flint and covered with thatch. In 1831, there were in the parish, which comprises 5430 acres, 436 inhabited houses and 2182 inhabitants: about two-fifths of the adult males were engaged in agriculture. The church is a fine cruciform structure, in the perpendicular English style: it has been enlarged by subscription in the course of the present century. There is a fine stone screen across the south transept, and an altar tomb of a young lady of the Courtenay family, granddaughter of Edward IV. An adjoining chapel is the burial-place of the family of De la Pole. The upper part of the tower of the church is octagonal. The vicarage house is an antient structure. There were formerly chapels at Colcombe, Colyford, Whitford, Gatcombe, and Leigh, in this parish. There are some valuable lands at Colyton, left for charitable purposes, from which a school for 20 or 25 boys is supported. There are meeting-houses for Independents and Unitarian Presbyterians. The markets are on Thursday and Saturday, and there are two fairs in the year for cattle.

The living of Colyton is a vicarage with the chapelries of Monkton and Shute annexed, worth 403*l.* per annum with a glebe-house, in the gift of the dean and chapter of Exeter, in whose peculiar jurisdiction it is. According to the return for 1833, there were in Colyton parish eight day schools (including the endowed school), with 198 children; and two Sunday-schools (one partly endowed), with 235 scholars.

In the parish of Colyton is Colyford, a considerable village, which is incorporated and governed by a mayor, who receives the profit arising from the tolls of a large cattle fair held annually. Near the town also are Colcombe castle, once the seat of the Courtenays, earls of Devonshire, and of the De la Poles; and Yardbury, the seat of a branch of the Drakes: both are now converted into farm-houses.

Crediton, antiently written Chridiatone, Cridiaton, Crideton, and Kirton, which last is still the colloquial designation, is in the hundred of Crediton, near the junction of the brook Yeo with the river Creedy, a feeder of the Ex, seven or eight miles north-west of Exeter: the Creedy flows a short distance from the town to the east, the Yeo a short distance to the south. The area of the parish is 11,440 acres: it is divided into ten tythings, containing in all, in 1831, a population of 5922. The town is divided into East town and West town: it is irregularly built; the principal street runs nearly east and west, between two hills, of which that on the south rises with a quick ascent and overtops the houses. The church is a handsome cruciform structure in the later perpendicular style of architecture; it stands in the middle of the town and was probably erected about the close of the fifteenth century. The interior is very neat: the tower rises from the intersection of the nave and aisles, and is supported by four pillars of uncommon magnitude. This church contains a parochial library once consisting of 1000 volumes, but many have been lost, and the rest are becoming a prey to worms and spiders. (*Beauties of England and Wales.*) There is an antient decayed chapel at the west end of the town, formerly belonging to the hospital of St. Lawrence; and the walls of a chapel at Yew or Yeo, in the parish. The serge manufacture was established in Crediton from the first introduction of it into the county, and was formerly carried on with considerable activity. Vast quantities of wool and yarn were sold weekly in the market-place; but this branch of industry has declined in Crediton, as it has elsewhere in Devonshire, and the returns of 1831 gave only 5 adult males out of 1336 as engaged in manufactures of any kind: 468 adult males were at the same time engaged in agriculture as occupiers of land or labourers, and 566 in trade or handicrafts. The market, which is on Saturday for corn and provisions, is considerable, but not equal to what it was formerly: the market which precedes the last Wednesday in April is one of the largest marts for bullocks in the west of England. There are three cattle fairs in the year. There are congregations of Presbyterians (who have, like many of the English Presbyterians, embraced Unitarian sentiments), Independents, Baptists, and Methodists. There are two sets of almshouses, each for four poor persons.

There is said to have been a collegiate church at Crediton early in the time of the Saxons, which church, upon the division of the diocese of Sherbourne in the reign of Edward the Elder, was made the cathedral of the bishops of Devonshire, about A.D 905 or 910: about A.D. 1040, the diocese of Crediton was enlarged by the addition of that of St. German's, which included Cornwall; but in A.D. 1050 the see was removed to Exeter. The palace at Crediton continued to be the occasional residence of the bishops, and the manor and hundred of Crediton continued to belong to them till the reign of Henry VIII., when the bishop (Veysey) reluctantly surrendered them to the crown. The site of the old church or cathedral, dedicated to St. Gregory, is now occupied by a range of houses by the side of the present churchyard. Although the see was removed to Exeter, the church retained the chapter, which consisted of eighteen canons or prebendaries, of whom three bore the titles of precentor, treasurer, and dean, and eighteen vicars. The chapter was dissolved in the reign of Edward VI.: its yearly revenue at the dissolution amounted to 332*l.* 17*s.* 5*d.* The small tithes, and subsequently the great tithes, of Crediton, Sandford, and Exminster, were vested in a corporation of twelve governors, nine from Crediton and three from Sandford. The governors appoint the vicar of Crediton, who has a yearly stipend of 400*l.* with a parsonage house: there is an assistant minister who has 200*l.* a year.

Crediton sent representatives to the parliament held at Carlisle in the time of Edward I. The town is governed by a portreeve: petty sessions are held here.

There were, in 1833, in Crediton parish, one infant school, partly supported by subscription, and containing 90 children; an endowed grammar school, containing 20 boys; a Lancasterian school, with 200 children, partly endowed and partly supported by subscriptions and collections; an endowed school for 15 boys; and nine other schools, containing 285 children; one day and boarding school, with 60 scholars; and six Sunday-schools, with 352 children.

Crediton was occupied by the revolters who rose in the west of England A.D. 1549, on account of the Reformation, but they were driven out by Sir Peter and Sir Gawen Carew. The town was repeatedly occupied by the contending parties in the civil war of Charles I. In A.D. 1743 a dreadful fire broke out in the western town, which occasioned the destruction of 460 houses; the damage was estimated at 40,000*l.*, and sixteen lives were lost. In 1769 a second fire consumed many of the houses rebuilt after the former fire, together with the market-house and shambles.

Culmstock or Columbstock is on the border of Somersetshire, in the hundred of Hemyock, on the upper part of the river Culm, nineteen or twenty miles north-east of Exeter. The parish comprises 4530 acres or seven square miles, and includes several villages and hamlets besides the town: it had, in 1831, 312 inhabited houses and 1519 inhabitants: of the adult males nearly one half were engaged in agriculture, and nearly one-seventh in manufactures. There is a market-house, 'built,' say Messrs. Lysons (*Magna Britannia*, vol. vi., p. 151, published 1822), 'not many years ago by the dean and chapter of Exeter.' The market, now much declined, is held on Friday for butchers' meat. There are two fairs in the year, at one of which cloth is sometimes sold; but the clothing trade, which once flourished in this place, has much declined. The church, dedicated to All Saints, is in the centre of the town; it contains a fine stone screen, with a rich doorway, canopied with foliage. There are meeting-houses for Quakers and Wesleyan Methodists; and one for Calvinistic Baptists at the village of Prescot, in the parish. The living is a vicarage, in the gift of the dean and chapter of Exeter, in whose peculiar jurisdiction it is: its annual value is 256*l.* with a glebe-house. There were in the parish, in 1833, two day-schools (one of them partly supported by contribution), with 144 children; and three Sunday-schools, with nearly 300 children.

Hatherleigh is in the hundred of Black Torrington, on the east or right bank of a stream which flows into the Torridge a short distance above the junction of the Okement: Hatherleigh is twenty-eight miles west-north-west of Exeter. The parish comprises 6500 acres, and had in 1831, 290 inhabited houses and a population of 1606. Of the adult males nearly two-thirds were engaged in agriculture, and a very few in the manufacture probably of woollens. The town is very irregularly laid out, and the houses, which are principally built of red clay, and are thatched, have a very mean appearance. The market is on Tuesday and Saturday, and there are four cattle fairs in the year and a large cattle market on the Friday nearest the 21st of March. The town is governed by a portreeve, two constables, and other officers annually chosen at the court held by the lord of the manor. Petty sessions are held here. The living is a vicarage, of the annual value of 202*l.* with a glebe-house. There were in the parish in 1833, five day-schools (one of them supported partly by endowment and subscription) containing 150 to 155 children, and one Sunday-school with 160 scholars: a lending-library is attached to the Sunday-school.

The manor of Hatherleigh formerly belonged to the abbey of Tavistock; one of the abbots gave a large plot of common land for the advantage of the townsmen.

Holsworthy is in the hundred of Black Torrington, not far from the east or left bank of a small stream that flows southward into the Tamer: it is forty-one or forty-two miles west by north of Exeter. The parish, which comprises 8870 acres, includes besides the town, four villages, if not more: the population in 1831 was 1628; not quite half of the adult males were engaged in agriculture. The Bude and Holsworthy canal, which unites with the Bude and Launceston canal, passes near the town. The market, which was held formerly on Saturday, has lately been changed to Wednesday; there is a great market on the second Wednesday in February, and there are three fairs in the year; one of them (in October) is a great fair for cattle and all sorts of commodities. The parish church is antient: it has some Norman piers and a plain Norman door, and some portions of later date. There were formerly chapels at Chelsworthy and Thorne in the parish. There are places of worship for Independents and Wesleyan Methodists. The petty sessions for the division are held at Holsworthy. The living is a rectory of the yearly value of 478*l.*, with a glebe-house. In 1833 there were in the parish six day-schools (one of them partly supported by subscription) with 222 children, and three Sunday-schools with about 250 children.

Ilfracombe is in the hundred of Braunton, on the coast of the Bristol channel, ten miles north of Barnstaple, and forty-seven or forty-eight north-west from Exeter. The parish has an area of 3620 acres, and had, in 1831, a population of 3201: of the adult males more than one-fifth were engaged in agriculture, and about the same number in retail trade and handicraft: there is a considerable coasting trade and herring fishery. The town consists of one main street extending north-east and south-west along the sea-coast, and reaching at the north-east end to the harbour, which is formed by an inlet or cove of the Bristol channel, very commodious and safe, affording anchorage to vessels of 230 tons, and rendered additionally secure by a pier 850 feet in length. The harbour being accessible to vessels which cannot make Barnstaple or Bideford, has caused much of the port business of Barnstaple to be transferred hither: there are a battery and lighthouse at the entrance of the harbour. Oats are the chief article of export. The houses are tolerably well built; a number, intended for the reception of visitors, range along the harbour. The shore is convenient for bathing, and there are warm baths for invalids. The town is considered an agreeable summer residence, and is much resorted to. There is a market on Saturdays well supplied with fish, and two cattle fairs in the year. The church is a large building at the south-west end of the town; it contains a monument, erected at the national expense, to the memory of Captain Richard Bowen, R.N., who fell in the unsuccessful attack made by Nelson on Teneriffe, July, 1797. There are meeting-houses in the parish for Wesleyans and Independents. The town is governed by a portreeve.

The living of Ilfracombe is a vicarage of the yearly value of 150*l.* with a glebe-house; the rectorial tithes are in the hands of one of the prebendaries of Salisbury cathedral who is patron of the vicarage. There were at Ilfracombe in 1833 one national school with about 130 children, supported partly by an endowment and subscriptions, and partly by a small weekly payment from the children: nineteen day-schools with 341 children (one of these schools with 18 children is supported by a small endowment and by subscription), and two Sunday-schools with 356 children.

Kingsbridge is in the hundred of Stanborough, in the southern part of the county, a short distance north-west of Start Point, at the head of a considerable æstuary into which a number of small streams flow: it is thirty-five miles south-south-west of Exeter. The town may be considered as composed of Kingsbridge and Dodbroke, or Dodbrook, which is in Coleridge hundred, and is separated from Kingsbridge only by a rivulet. The area and population of these parishes in 1831, were, Kingsbridge, 150 acres, 1586 inhabitants; Dodbroke, 420 acres, 1038 inhabitants; total 570 acres, 2624 inhabitants. The number of inhabited houses in the two parishes was in 1831, 378. Of the adult male population scarcely more than one-tenth was engaged in agriculture, and scarcely any in manufacture: the manufacture of woollen cloths and serges formerly carried on with considerable activity having become nearly or quite extinct. Ships of burden can come up to the town at high water, and there are two quays, one in Dodbroke, and the other in the parish of West Alvington, or Allington, adjacent to Kingsbridge. Cider, corn, malt, and slate are exported; the chief imports are sea-borne coals. The market is on Wednesday, for corn, butchers' meat, and provisions: the corn-market is one of the largest in Devonshire. There is one fair in the year. Kingsbridge consists mainly of one street on the Modbury and Plymouth road; Dodbroke, of one on the Exeter road: these streets unite at the lower end of the town near the haven. The church of Dodbroke, dedicated to St. Thomas-à-Becket, has an early stone font, and some portions of good screen work. There are meeting-houses for Independents, Baptists, Quakers, and Wesleyan Methodists. The living of Kingsbridge is a vicarage united with that of Churchstow, or Churstow, an adjacent parish to the north-west; their joint yearly value is 118*l.*; they are in the gift of the crown. The living of Dodbroke is a rectory of the yearly value of 183*l.*, with a glebe-house. There were in Dodbroke in 1833, 6 day-schools with 130 children, all very young; and in Kingsbridge, 1 infant school with 14 children, and 7 other day-schools, 6 of them containing 150 children of both sexes; the seventh is a grammar-school endowed for the instruction of at least 15 boys, with exhibitions for three or four scholars to the universities: the number of scholars actually taught is not stated in the return. There were in Kingsbridge also 4 Sunday-schools with 97 scholars.

Modbury is in the hundred of Ermington, on a rivulet whose waters flow into the Erme: thirty-five miles south-west of Exeter. The parish comprehends an area of 5910 acres, and had, in 1831, 364 inhabited houses, with a population of 2116 persons. Besides the town the parish comprehends the villages of Brownston, Leigh, Caton, Penquit, part of Ludbrook, and others. Nearly half of the adult males are engaged in agriculture, scarcely any in manufacture. The town consists of an irregular assemblage of streets. The church is spacious and handsome: the tower is 134 feet high, built soon after the church in 1621. There are meeting-houses for Baptists, Independents, Quakers, and Methodists. There are some ruins of the antient mansion of the Champernounes, who held the manor of Modbury, and lived here in great splendour: a large deer-park which was at a small distance from the mansion, is now converted into a farm, which retains the name of Modbury Park. Modbury is a borough, though without a charter of incorporation: it sent representatives to parliament in the reign of Edward I., but it is said soon to have got excused on the ground of the expense: whether this was the cause is, however, doubted by Messrs. Lysons. Modbury is now governed by a portreeve (usually styled mayor) two constables, and several other officers, chosen at a court-leet. Until the beginning of the eighteenth century the borough court took cognizance of debts under forty shillings. There was an alien priory of Benedictines here as early as the reign of Stephen, but it was suppressed at the dissolution of alien priories, and its revenues, valued at 70*l.* per annum, were given by Henry VI. to Eton College. The market is on Thursday, for corn, butchers' meat, and other provisions: there is a great market for cattle on the second Tuesday in every month, and a great fair for cattle, cloth, and other merchandise, in the month of May. The living of Modbury is a vicarage of the annual value of 302*l.*, with a glebe-house, in the gift of Eton College. There were at Modbury in 1833, two infant schools with 76 children, and a Lancasterian school with 70 boys, all partly supported by charitable contributions; four other day-schools with 116 children, and three Sunday-schools with 287 children. A lending-library is attached to one of the Sunday-schools.

South Molton is a market-town and municipal borough in the hundred of South Molton, twenty-seven or twenty-eight miles north-west of Exeter, on the right or west bank of the river Mole. The limits of the borough are the same as those of the parish, and comprehend an area of 6160 acres, with a population, in 1831, of 3826: of the adult males about three-eighths were engaged in agriculture. The town is well situated for business at the convergence of several principal roads, viz.: one from Exeter by Crediton, one from Tiverton, one from Barnstaple, one from Torrington, and one from Chulmleigh: it consists of a spacious market-place and several streets, well paved, with flagged foot-ways, and lighted; the public walks are kept remarkably clean. The guildhall is a convenient building, and the borough gaol, built a few years since, contains six cells (two of them strong cells,) two large day-rooms and a good yard. The church, which is adjacent to the market-place, is a handsome building in the perpendicular style of architecture: it has a rich stone pulpit adorned with statues and a profusion of varied carved foliage. There are meeting-houses for Independents and Wesleyans. At Honiton, two miles south-west of the town, is an episcopal chapel, built on the site of a more antient one, and handsomely decorated, and endowed by the Rev. Lewis Southcomb, A. D. 1730; over the altar-piece is a picture of our Saviour baptized by John the Baptist.

The woollen manufacture is carried on at South Molton to some extent; nearly 70 adult males are engaged in it: serges, shalloons, and felts were formerly made, and (in 1822) coarse woollens for Spain and the East Indies; the lace manufacture has recently been introduced. The markets are on Tuesday and Thursday for butchers' meat, and on Saturday for corn and provisions generally: the Saturday market is considerable, and there are great markets on the Saturday after February 13 and March 25, and before April 23, August 1, October 10, and December 12. There are two fairs in the year for horses and cattle.

By the Municipal Reform Act the town has a mayor, four aldermen, and twelve councillors. The sessions of the peace are held quarterly, the petty sessions every three weeks, or oftener if required, and the court of record every three weeks.

The living of South Molton is a perpetual curacy in the gift of the dean and chapter of Windsor, who are impropriators of the great tithes which they lease to the corporation; the annual value of the curacy is 157*l*. The number of schools in the parish in 1833 was as follows: eleven infant (or dame) schools, with about 200 children; seven day, or day and boarding-schools, with above 350 children; and three Sunday-schools, with 640 children. Of the day-schools one is an endowed grammar-school; one (the Blue-coat school, in which most of the children are clothed), is supported by an endowment and contributions; and a third is supported by contributions.

Moreton Hampstead is in Teignbridge hundred, near the eastern border of Dartmoor Forest, and near the Wadley brook, which flows into the Bovey river, and so into the Teign, twelve miles west by south of Exeter, on one of the roads from that place to Tavistock and Plymouth. The area of the parish is 7370 acres, and it contained in 1831, 383 inhabited houses, and a population of 1864. The town is romantically situated on a gentle eminence bounded on almost every side by high hills. The principal street runs for about half a mile along the Exeter and Plymouth road. There are meeting-houses for Unitarians, Independents, Baptists, and Methodists. Of the adult male population above half are engaged in agriculture: there are no manufactures carried on: that of woollen yarn and serge has become extinct. The market is on Saturday for corn and provisions; the market next before Whitsuntide is a great cattle market: there are two cattle fairs in the year. The town is governed by a portreeve, and other officers chosen annually at the court of the lord of the manor. The towns-people are distinguished by singularity of dialect and manners, owing probably to their secluded situation on the border of Dartmoor. The living is a rectory in the gift of the earl of Devon: annual value 401*l*., with a glebe-house. There were in the parish in 1833, eight infant schools, with 70 scholars; one day-school, with 33 boys and 6 girls, partly supported by an endowment and an allowance from the parish; six other day-schools, with 69 boys and 42 girls; and three Sunday-schools, with 82 children; one of the Sunday-schools has a lending-library attached to it.

Newton Abbot is in the parish of Woolborough, or Wolborough, in the hundred of Haytor; and Newton Bushel, which is adjacent to Newton Abbot, being separated from it only by a narrow brook which flows into the Teign, is in High Week parish, and in Teignbridge hundred: the two may be considered as forming one town a short distance from the south or right bank of the Teign, fifteen miles south by west of Exeter. The area, population, &c., of the parishes by the census of 1831 were as follows:—

	Acres.	Inhabited houses.	Inhabitants
High Week .	2140 . .	216 . .	1109
Woolborough .	970 . .	442 . .	2194
Total . . .	3110	658	3303

Of the adult male population, amounting to 734 persons, 110 were engaged in agriculture and only 3 in manufactures. There is a market on Wednesday held at Newton Abbot; that on the last Wednesday in February is a great cattle market: there are three cattle fairs in Newton Abbot. The principal street of the town runs north-west and south-east for above half a mile: another principal street runs into this from the south-west, and there are some smaller ones: the houses are indifferently built, and the streets ill paved: the market-place and shambles in the principal street obstruct the thoroughfare. The parish churches are at some distance from the town: there is a chapel of ease at Newton Bushel, the minister of which is appointed by the incumbent of High Weeks, and another chapel in Newton Abbot, served by the minister of Woolborough. There are meeting-houses for Independents and Calvinistic Baptists. There is an alms-house in the parish of Woolborough for two clergymen's widows, originally for four. The living of High Week is a curacy united with the vicarage of King's Teignton; the value of the joint livings is 396*l*., with a glebe-house, in the gift of the prebend of Teignton Regis, or King's Teignton, in Salisbury cathedral. The living of Woolborough is a donative united with the curacy of Newton Abbot, of the annual value of 235*l*., in the gift of the earl of Devon. In 1833 there were in High Week and Woolborough parishes, one national school, containing 82 boys and 64 girls, who were taught daily, and 10 boys and 12 girls additional on Sunday; one endowed day-school for 100 children of both sexes; two boarding and day-schools, with 63 scholars, eight day-schools with above 200 children of both sexes, and one Sunday-school of 33 children.

Oakhampton, or Okehampton, is in Lifton hundred, on the northern border of Dartmoor, at the junction of the East and West Okement rivers, twenty-two miles west of Exeter, on the road to Launceston. The parish comprehends an area of 12,570 acres, and includes, beside the town of Oakhampton, the villages of Chissacot and Meldon, and the hamlet of Kigbear, which extends into Black Torrington hundred. The number of inhabited houses in 1833 was 393, of inhabitants 2055: of the adult males about half were engaged in agriculture; none in manufactures. The town lies in a valley, and is surrounded by rich meadows and wooded acclivities. The town is irregularly laid out. There is an old chapel in the market-place, dedicated to St. James, originally founded as a chantry, which belongs to the corporation; divine service is occasionally performed in it. The church is on an eminence some distance west of the town. There are in the parish places of worship for Independents and Wesleyan Methodists. Oakhampton Castle, formerly in the possession of the Courtenays, was on a hill within a mile south-west of the town. It was dismantled by order of Henry VIII., and is now a mere ruin; the extent of the area occupied by it, and the solidity of the walls, show it to have been a fortress of importance. Oakhampton is a place of little trade: the market is on Saturday: that next before Christmas is a great cattle market. There are seven fairs in the year; one of them, a holiday fair, called 'Giglet Fair,' is held on the Saturday next after Christmas Day. Oakhampton is a municipal, and was, up to the passing of the Reform Act, a parliamentary borough. The bounds of the borough included the whole parish. It sent members to parliament in the reigns of Edward I. and Edward II., but the privilege was lost or disused until the time of Charles I.; the right of election was in the freeholders or the freemen by servitude and their eldest sons: it was disfranchised by the Reform Act. The municipal corporation consisted of a mayor, eight principal and eight assistant burgesses, with other officers. When the commissioners for inquiring into the state of the municipal corporations visited Oakhampton, the borough court of record had gone quite into disuse, the borough sessions nearly so, and the gaol was in a most wretched state: the chaplaincy of St. James's chapel had been long vacant, and the grammar-school given up.

The living of Oakhampton is a vicarage, of the yearly value of 480*l.*, with a glebe house. There were in the parish, in 1833, thirteen day-schools with 348 children, and three Sunday-schools with 315 children. Four of the day-schools, containing 128 children, are supported by subscription: one of the Sunday-schools has a lending library attached.

Ottery St. Mary is in the hundred of Ottery, and on the east or left bank of the river Otter, about eleven miles from Exeter. The hundred of Ottery contains only this parish, which has an area of 9470 acres; the population in 1831 was 3849: of the adult males above half were engaged in agriculture, and only one person in manufacture. The town is irregularly laid out, but in a pleasant situation. The church, formerly collegiate, is large and in the form of a cross: it resembles Exeter cathedral in having two towers for transepts. The architecture is chiefly in the early English style, of a character rather different from what is common, and with various alterations of a later date: the northern tower is crowned by a low spire. There is a Lady chapel. There are several monuments in the church of some antiquity, especially an altar tomb with the effigy of an armed knight and a rich monumental arch over it. There were formerly chapels at Ottery dedicated to St. Saviour and St. Budeaux, and also chapels of which there are some remains at Holcome and Knighteston, in the parish. There is a place of worship for Independents. The remains of an ancient mansion, once inhabited by Sir Walter Raleigh, are said (*Beaut. of Eng. and Wales*, 1809) to be yet existing; and there are some antient collegiate houses just outside the churchyard. The serge manufacture, formerly flourishing, has declined. The market is on Tuesday for butchers' meat and provisions, and there are three fairs in the year.

The living of Ottery is a vicarage in the gift of the lord chancellor, of the yearly value of 112*l.* with a glebe house. There were, in 1833, one infant-school with 40 children, principally supported by private charity: nine day or boarding and day-schools with 421 children; two day and Sunday-schools, with about 60 children, supported by private charity; and three Sunday-schools, with 257 children. Of the day or boarding and day-schools one is an endowed grammar-school, with hardly any boys on the foundation.

Plympton St. Maurice, commonly called Plympton Maurice, or Plympton Earl, is in the hundred of Plympton, not far from the south bank of the Tory brook, which flows into the Plym, and is on the road from Modbury to Plymouth, about thirty-nine miles south-west of Exeter. The parish contains only 170 acres: it had, in 1831, 123 inhabited houses, and a population of 804 persons. It was, up to the passing of the Reform Bill, a parliamentary borough, and has still a municipal corporation: the borough limits comprehend part of the adjacent parishes of Plympton St. Mary, and Brixton, and some extra-parochial ground. It is one of the stannary towns. There was formerly a castle here, belonging to the family of De Redvers, or Rivers, who held the earldom of Devonshire before the Courtenays. This castle was on the north side of the town; there are only some scanty remains of the walls of the keep, but the earth-works show it to have been a place of great strength. The town has two principal streets: the town-hall contains a portrait of Sir Joshua Reynolds, who was a native of the place, painted by himself. There is an Independent meeting-house. The market is on Friday for corn and provisions, and there are five cattle fairs in the year. The borough revenue has been insufficient to meet the expenditure; and as the supply afforded to the corporation funds by the patron of the borough has been withdrawn since the passing of the Reform Act, it is probable the corporation will fall into desuetude. The living of Plympton Earl is a perpetual curacy, of the yearly value of 100*l.*, in the gift of the dean and chapter of Windsor. The grammar-school, though endowed with estates producing upwards of 200*l.* a year, has been useless for twenty years or more, the office of master having been converted into a complete sinecure. There were, in 1833, six day-schools with 111 children, one boarding school with 17 girls, and one sunday-school with 50 children.

Teignmouth is in the hundred of Exminster, at the mouth of the river Teign, on the north side of the river, about sixteen miles south of Exeter. It consists of East Teignmouth and West Teignmouth, which are separated by a small brook. The area, population, &c. of their respective parishes, according to the returns of 1831, were as follows:—

	Acres.	Inhabited houses.	Population.
East Teignmouth	700	315	1810
West Teignmouth	580	523	2878
Total	1280	838	4688

There are no manufactures carried on, and the proportion of persons engaged in agriculture is very small. Teignmouth is much frequented as a bathing-place, and has every accommodation for invalids. The trade too is considerable: the inhabitants are much engaged in the Newfoundland fishery. There are considerable exports of granite (for the conveyance of which from the Haytor quarries a railroad has been constructed), pipe-clay, potters' clay, manganese, timber, bark, and cider: the imports are of culm, coal, deals, iron, &c. There is a considerable fishery for soles, whiting, turbot, mackerel, and pilchards, on the coast, and for salmon in the river Teign. East Teignmouth church is near the sea-shore; it has been rebuilt within a few years on an enlarged scale: the former church was an antient fabric, with a massive tower, and had some windows and other parts of Norman architecture. West Teignmouth church is large and handsome; it was built under an Act passed A. D. 1815. There is an Independent meeting-house in East Teignmouth; also a theatre, assembly, coffee, and billiard rooms. The bridge over the Teign, opened in 1827, is the longest in the united kingdom, being 1671 feet long, 429 feet longer than Waterloo Bridge. A new market-place has been built of late years. The market is in East Teignmouth; it is on Saturday for provisions of all kinds: there are three fairs also in East Teignmouth. The livings of East and West Teignmouth are perpetual curacies. The yearly value of East Teignmouth is 127*l.*; West Teignmouth is now united with the vicarage of Bishop's Teignton, the yearly value of which is 334*l.*, with a glebe house. Teignmouth contained in 1833 five infant schools with 134 children, sixteen day-schools with 570 children, and two Sunday-schools with 199 children. Of the day-schools one was partly supported by a small endowment, and another was on the so-called 'national' system. The cliffs near Teignmouth rise in some parts to the height of from 150 to 200 feet.

Topsham is in the hundred of Wonford, three and a half miles south-east of Exeter, on the left or eastern bank of the Ex, at the junction of the Clist. The parish comprehends an area of 1740 acres, and had in 1831 a total population of 3184. No manufacture is carried on at Topsham. The town consists almost entirely of one street of irregular breadth, and about a mile in length, extending along the bank of the Ex, with a quay at the lower end of it. At the back of the town is a bridge over the Clist, communicating with the road from Exeter to Lympstone and Exmouth. The houses are generally of mean appearance; but some of them are handsome. The end towards the quay, called the Strand, is inhabited chiefly by persons of property, of whom there are many at Topsham. The houses here command a fine view of the Ex, with the opposite country, backed by the lofty heights of Great and Little Haldon. The church is in the centre of the town, on a high cliff next the river. There are places of worship for Presbyterians, Independents, and Wesleyan Methodists. Topsham was formerly considered as the port of Exeter: lately the facilities for vessels getting up to Exeter have been increased. There is a communication by steam-boats between Topsham and London. The market is on Saturday, and there is one small fair in the year.

The living of Topsham is a perpetual curacy in the gift and the peculiar jurisdiction of the dean and chapter of Exeter: its yearly value is 227*l.*

The number of schools in 1833 was as follows: twenty-four day, or boarding and day schools, with 636 children; and four Sunday schools, with 402 children. One of the day schools was a National school, and contained 90 boys and 77 girls.

When Exeter was besieged by the Royalists under prince Maurice, in the civil wars of Charles I., A.D. 1643, the earl of Warwick, who commanded the parliamentary fleet, in attempting to relieve the town, battered down a fort at Topsham, and killed seventy or eighty men. Topsham was antiently called Apsham or Apsom.

Torrington (distinguished from Little Torrington and Black Torrington by the epithet Great) is a municipal borough and market-town in the hundred of Fremington, about thirty-six miles from Exeter, by Crediton, Chulmleigh, and Cranford Moor. The borough is co-extensive with the parish, which comprehends an area of 3640 acres. The total population in 1831 was 3093. The town is situated on a hill, on the northern or right bank of the Torridge, over which there is a bridge communicating with the little suburb of Taddy Port. The church is in a central situation. Torrington castle stood on the south side of the town, on a steep eminence, overlooking the Torridge; it was built by Richard de Merton, A.D. 1340: its site is now a bowling-green.

The principal manufacture carried on in Torrington and the country round is that of gloves; this branch of industry was in 1834 in a very flourishing state. The market is held on Saturday, for corn and butchers' meat; there are three fairs in the year, and a great cattle-market on the third Saturday in March.

The quarter sessions and petty sessions are regularly held; the court of record has gone into disuse. The new act assigns to Torrington four aldermen and twelve councillors.

The living of Torrington is a vicarage, united with the perpetual curacy of the neighbouring parish of St. Giles in the Wood: their joint yearly value is 162*l.*: they are in the gift of Christ Church College, Oxford. There were in 1822 places of worship for Presbyterians, Wesleyans, and Baptists. (Lysons.)

The number of schools in 1833 was as follows:—three infant schools, with 112 children; seven day schools (one partly endowed, and one partly supported by subscription), with 322 children; and three Sunday schools, with 383 children. There are two sets of almshouses, one for six poor persons, unendowed; another for eight poor persons, with an endowment.

In February, 1646, the Royalists under Lord Hopton were attacked at Torrington by the Parliamentary forces under Fairfax, and entirely defeated. This defeat was the death-blow to the Royalist cause in the west. Torrington gives the title of Viscount to the family of Byng.

Uffculm, or Uffculme, is in Bampton hundred, on the right or north-west bank of the river Culm, a feeder of the Ex, about sixteen or seventeen miles north-north-east from Exeter. The parish comprehends an area of 5920 acres, and had, in 1831, 416 inhabited houses and 2082 inhabitants: of the adult male population nearly half were engaged in agriculture. Uffculm was in the middle, and even towards the close of the last century, a considerable manufacturing town; a great quantity of serge was made and exported to Holland by the Tiverton merchants. Flannels were afterwards made, but at present the manufactures have ceased. The market is on Wednesday, and there are three fairs in the year, but the fairs have all declined. The church, dedicated to St. Mary, contains some antient monuments and a rich wood screen. There are places of worship for Independents and particular Baptists. The living at Uffculm is a vicarage, of the yearly value of 350*l.*; the rectory forms the corps of a prebend in Salisbury Cathedral; the prebendary is the patron of the vicarage. There were at Uffculm in 1833 nine day-schools and one evening-school with 144 children, and three sunday-schools with 253 scholars. One of the day-schools is a grammar school, with an endowment worth from 70*l.* to 80*l.* a year, but it contained in 1833 only two scholars.

Beside the above market-towns, there are a few other places in Devonshire which are entitled to a brief notice.

Combe Marten is in Braunton hundred, on the north coast, about five miles east of Ilfracombe. It had in 1831 a population of 1031 inhabitants. It was formerly known for the growth of excellent hemp and the manufacture of shoemaker's thread, but these branches of industry have been given up. The trade of the place is inconsiderable. Welsh coal is imported, and corn and bark are exported: lime is burnt in considerable quantity. The market has been long discontinued: the living is a rectory, of the yearly value of 387*l.*, with a glebe house. The Wesleyans have a place of worship here.

Hartland is an extensive parish in Hartland hundred: it contains several villages. The church is in the village of Stoke, and the market was held in that of Harton. The market-house is standing, but no weekly market has been held for half a century. There is a great market or fair for cattle on the second Saturday in March, and two cattle fairs in the year. At Hartland Pier, near Hartland Point, corn is exported, and coal and limestone imported. The living of Hartland is a perpetual curacy in the gift of the governors of the Charter-house in London; it is worth 97*l.* a year. It is said there were formerly eleven chapels in the parish. The Independents have a meeting-house. Hartland Abbey was founded by the wife of earl Goodwin for secular priests; but in the time of Henry II. these seculars were changed into an abbot and convent of Black or Augustinian canons. The revenues of this house at the dissolution were 306*l.* 13*s.* 2*d.* according to Speed, and 306*l.* 3*s.* 2*d.* according to Dugdale. Some portion of the cloisters of the abbey remain; they are in the early English style. The population of the parish in 1831 was 2143 There were in 1833 seven day-schools, with 179 children.

Bradninch, a borough between Collumpton and Exeter, is in Hayridge hundred. It had in 1831 a population of 1524, more than half of which was agricultural. The market has been disused beyond the memory of those now living. The boundaries of the borough are identical with those of the parish, and include an area of 4320 acres. The town consists principally of one street, extending for above half a mile along the Exeter and Collumpton road; the foopaths are paved. The quarter sessions, petty sessions (monthly), and court of record are kept up. There is a guildhall with a small gaol under it, which has been lately rebuilt. The church is near the middle of the town, and has a rich screen across the nave and aisles. The living is a perpetual curacy of the yearly value of 102*l.*, with a glebe house in the gift of the Dean and Chapter of Windsor. There is a Baptist meeting-house, with which a Sunday-school is connected. There were in 1833 three day-schools and one boarding-school at Bradninch, containing sixty or eighty children. Beer Alston is in the parish of Beer Ferris or Ferrers, and in the hundred of Roborough; it is between the Tamer and the Tavy. It had no market for many years, but was up to the Reform Act a parliamentary borough. [BEER ALSTON.] Thorncombe, in a detached part of the county, included between Dorsetshire and Somersetshire, had formerly a market, which was discontinued about the year 1770. The population of the parish, which is large and includes several villages, was, in 1831, 1368. In this parish stood Ford Abbey, to which an abbot and twelve Cistertian monks were removed A.D. 1141. This abbey at the dissolution was valued at 381*l.* 10*s.* 6*d.* gross yearly income, or 374*l.* 10*s.* 6*d.* clear. There are some remains of the monastic buildings: the chapel has a groined roof (early English) and some late Norman arches; the hall and cloisters are of rich late perpendicular architecture. Silverton is between the Ex and the Culm, seven miles north of Exeter, in Hayridge hundred. There has been no market since 1785. The church, which lies a little back from the principal street, is a handsome edifice in the perpendicular style. The population of the parish in 1831 was 1359. Sheepwash or Shipwash is in Shebbear hundred on the north bank of the Torridge, a short distance west by north of Hatherleigh. The market was considerable in the middle of the last century, but since the latter end of that century it has been discontinued. The parish is not large, and had in 1831 only 446 inhabitants. Exmouth, the situation of which is indicated by its name, is a place much resorted to as a bathing-place. It is in East Budleigh hundred, and about eight miles south of Exeter. The population of the joint parishes of Littleham and Exmouth in 1831 was 3189. Exmouth was in the reign of King John one of the principal ports of the county, and in 1347 it furnished 10 ships and 193 mariners for the expedition against Calais. In the civil war of Charles I. Exmouth fort was garrisoned for the King, but taken by the Parliamentarians. There is a national school, for which Lord Rolle built a school-room, and to which Lady Rolle bequeathed an endowment. Dawlish, between the mouths of the Ex and the Teign, is also frequented as a bathing-place. It is in Exminster hundred, and had in 1831 a population of 3151. Torquay, also a fashionable watering-place, is on the north side of Torbay, in the parish of Tor Mohun, or Moham in Haytor hundred. Tor Mohun parish had in 1831 a population of 3582. A market-house has been built, and there are hotels and bath rooms, terraces, and detached cottages. The inhabitants are engaged in the Newfoundland and home fisheries, and carry on some coasting trade. Paignton, population, in 1831, 1960, formerly a market-town, is on the west side of Torbay. Clovelly, on the north coast, is a village remarkable for its picturesque situation and appearance. The houses are built on the face of a steep rock. There is a pier at Clovelly. The inhabitants are engaged in fishing. Population, in 1831, 907.

Though none of the above places (except perhaps Torquay) has a market now, several of them are put down in the maps as market-towns.

Divisions for Ecclesiastical and Legal Purposes.—From the introduction of Christianity among the Anglo-Saxons to the year 703, the southern part of England, from Kent to Cornwall, was under one bishop. Upon the ecclesiastical division which took place in 703 (in the reign of Ina, king of Wessex), Devonshire became part of the diocese of Sherbourne. About A. D. 910 (in the reign of Edward the Elder, son of the great Alfred) Devonshire formed a diocese of itself, the see being at Crediton. About the year 1040, in the reign of Harold I., or Hardicanute, Cornwall, which had previously formed the separate diocese of St. Germans, was united with Devonshire, and the see was soon afterwards, A. D. 1050 (in the reign of Edward the Confessor), removed to Exeter, where it has ever since continued. That part of the diocese which is in Devonshire is divided into three archdeaconries, which are subdivided into twenty-three rural deaneries, as follows:—I. Archdeaconry of Exeter, in the eastern part of Devon, comprehending the rural deaneries of (1) Aylesbeare, (2) Cadbury, (3) Christianity, or Exeter, (4) Dunkeswell, (5) Dunsford, (6) Honiton, (7) Kenne, (8) Plymtree, (9) Tiverton. II. Archdeaconry of Barnstaple, in the north, comprehending the rural deaneries of (10) Barum, or Barnstaple, (11) Chulmleigh, (12) Hertland, (13) Shirwell, (14) South Molton, (15) Torrington. III. Archdeaconry of Totness, in the south and west, comprehending the rural deaneries of (16) Holsworthy, (17) Ipplepen, (18) Moreton, (19) Oakhampton, (20) Tamerton, (21) Tavistock, (22) Totton, or Totness, (23) Woodleigh. The office of dean rural is an efficient one; the deans are appointed yearly at the visitations.

The number of benefices in the county is given by Messrs. Lysons (*Magna Britannia*) at 471, of which 258 are rectories, 130 vicarages, 42 donatives, or curacies, and 41 parochial chapelries. There are several chapels of ease. Several of the churches are in the peculiar jurisdiction of the bishop, the dean, the dean and chapter, or the vicars choral of Exeter; one is in the peculiar jurisdiction of the dean and chapter of Salisbury. The diocese of Exeter is in the ecclesiastical province of Canterbury.

Devonshire is included in the western circuit: the assizes and quarter sessions for the county are held at Exeter, which city is a county of itself, having been made so by statute 2 & 3 Edward VI. The stannary laws [Cornwall] have been in force from a very early period in the mining district in the south-west part of the county. The stannary towns are Ashburton, Chagford, Plympton, and Tavistock. The stannary prison was at Lidford Castle, now a ruin.

The county returns four members to parliament, two for the northern and two for the southern division. The election for the northern division is held at South Molton; the polling stations are South Molton, Collumpton, Barnstaple, Torrington, Holsworthy, and Crediton. The election for the southern division is held at Exeter, and the polling stations are Exeter, Plymouth, Honiton, Newton Abbot, Kingsbridge, Tavistock, and Oakhampton. The city of Exeter returns two members, as do the following boroughs: Barnstaple, Devonport, Honiton, Plymouth, Tavistock, Tiverton, and Totness. The boroughs of Ashburton and Dartmouth return one each; making the total number of members for the county, city and boroughs, twenty-two, four less than before the Reform Act. Beer Alston, Bradninch, Crediton, Fremington, (near Barnstaple), Lidford, (between Tavistock and Oakhampton), Modbury, South Molton, Oakhampton, Plympton, and Great Torrington, once sent members to parliament. Torrington lost the right in consequence of the inhabitants finding the maintenance of their representative too heavy a burden, and petitioning to be excused: it is said that the same was the case with several of the other boroughs; but there are no records to show this. Beer Alston, Oakhampton, and Plympton were disfranchised by the Reform Act. Exmouth and Teignmouth sent representatives to the great councils for maritime affairs.

History. Antiquities.—The earliest ascertained inhabitants of this county were the Damnonii (Richard of Cirencester), Dumnonii or Dumnunnii (*Itin.* Antonin.), or Δουμνονιοι (Ptolemy). It has been disputed whether these were the original Celtic inhabitants, or whether they were Belgic invaders who drove out a Celtic people (the Cimbri of Richard of Cirencester, as some think), who had previously occupied the country. The Cimbri, according to Richard, inhabited the country west of the river Uxella (the Parret); their territory therefore probably included the north part of Devonshire. We have no authentic accounts of any conflict between the Damnonii, or Cimbri, and the Romans during the conquest of Britain by the latter: Geoffrey of Monmouth speaks of a drawn battle near Exeter between Vespasian, afterwards emperor, and the Briton, Arviragus; but his authority is worth little. The many antient encampments in Devonshire mark it as the scene of early encounters: some of these camps are evidently Roman. After the Roman conquest Devonshire was included in the province of Britannia Prima.

Of this remote period there are many remains. Circular enclosures formed by low stone walls occur in various parts of Dartmoor. Grimpspound, as it is called, about three miles from the village of Manaton, on the east side of the moor, is a circular enclosure of three acres: it has two entrances directly facing the north and south: at these points the wall, which appears to have been about twelve feet high, was the thickest. In the enclosure are several circles of stone of twelve feet diameter, especially near the south side of the enclosure. This enclosure has been supposed by some to be a British town, connected with some antient tin works, which may be traced near the spot; by others, a place of religious worship. There are in the parish of Bratton Fleming, between South Molton and Ilfracombe, six upright stones, the remains apparently of an antient circle. The granite tors of Dartmoor are natural. There are some sepulchral stones on Maddocks' Down (south of Combe Marten), and a cromlech at Drew's Teignton, between Exeter and Oakhampton. There seems no reason to trace the name of Drew's Teignton to the Druids, as some have proposed to do; it is more probably derived from Drogo, or Drewe, who possessed the manor in the time of Henry II. Numerous barrows, or tumuli, occur on Haldon, and other downs, particularly in North Devon, and some cairns, or piles of stones. Roman antiquities have been found in some barrows when opened.

Of Roman stations in Devonshire the most important appears to have been Isca Damnoniorum, which the name, and the antiquities discovered, concur in fixing at Exeter. We believe the best modern antiquaries are agreed as to the site of Isca: the earlier antiquaries (Horsley, &c.) were misled by what is now an evident corruption in the Itinerary of Antoninus. Another Roman station, Moridunum, or Muridunum (Itin. Anton.) is agreed by most to have been in this county, but whether at Hembury, near Honiton, where there is an antient camp, or at Seaton, on the coast, at the mouth of the Axe, is not so clear. Two other stations are mentioned by Richard of Cirencester: 'ad Durium,' (the station on the Durius, or Dart,) supposed to be Totness; and Tamara, the name of which indicates its situation somewhere on the river Tamara (Tamer), and which was probably at Tamerton Folliot, on the æstuary of the river some miles above Devonport. Richard also mentions two British towns, Termolus and Artavia, in the territory of the Cimbri, and probably in the north of Devon. These are identified by the late bishop of Cloyne in Lysons' 'Magna Britannia,' with the Termonin and Mostevia of the geographer Ravennas. The former of these towns (Termolus) the bishop fixes at Molland Bottreaux (between South Molton and Dulverton, Somersetshire), where there is a large antient cairn, and to which a number of roads on all sides point; and the latter is supposed to have been near Hartland point. It has been conjectured that Denbury, near Newton Abbot, is the place called Devionisso by the geographer Ravennas.

An antient British road, afterwards converted by the Romans to their own use, traversed the whole county from east to west, passing near Axminster and Honiton to the camp at Hembury, and by a subsequent bend, to Isca, or Exeter. From Isca, it ran south-west over Haldon and near Newton Abbot to Totness, and from thence west to the Tamara, or Tamer. This road has preserved in Dorsetshire (before it enters Devon) its old British name of the Ikeneld way. Many other roads may be traced. The Roman antiquities found in the county have not been numerous: the principal seem to have been at Exeter, where a tessellated pavement was found, some bronzes, coins, and other remains. Some antiquities have been found at Seaton, and other places.

The name of the British nation, the Damnonii, or Dumnonii, has been (but apparently with little reason) derived by some from two Phœnician words, 'dan,' or 'dun,' a hill, and 'moina,' mines. The Cornish Britons named the country, 'Dunan;' the Welsh, 'Deuffneynt,' which evidently contains the same elements as the Saxon, Devenascyre, Devnascyre, or Devenschire. The Welsh, Deuffneynt, is defined by Camden to mean 'deep valleys.'

In the Saxon invasion this county became the scene of contest. Cynegils, king of the West Saxons, is said by the Saxon chronicle to have beaten the Britons at Beamdune, supposed to have been Bampton, A. D. 614. Matthew of Westminster speaks of a battle fought A. D. 633, between Penda, king of Mercia, who had besieged Exeter, and Cadwallo, king of the Britons, but his account is hardly consistent with the history of the time. We find no historical notices of Devonshire from this period until the invasions of the Danes.

The pressure of the West Saxons gradually constrained the Britons to retire westward. Devonshire was for a long period debateable ground; it was in great part occupied by the Saxons, but there is reason to think that it was not until the reign of Athelstan, who is said to have defeated Howell, king of Cornwall, near Exeter, A. D. 926, that the Britons were finally compelled to retire beyond the Tamer. Their complete expulsion from Devonshire was probably retarded by the incursions of the Danes, who commonly found them ready to unite with them against the Saxons, the objects of their common hostility. In A. D. 876, 877, the Danes seem to have wintered at Exeter, and were in 877 besieged by Alfred, who compelled them to make peace, and to give hostages for the observance of it. In A. D. 878, when Alfred had been compelled by a Danish invasion to conceal himself, Ubbo or Hubba, one of the sons of Ragnar Lodbrog and one of the chiefs of the invaders, landed in the north of Devon, and blockaded Kynwith castle, near Appledore. Odun (who is styled earl of Devon,) who occupied the castle, made a vigorous sally just about daybreak, slew Ubbo and nearly 1000 of his men, and captured the magical standard of the Danes, woven by the sisters of Ubbo, and worked with the figure of a raven. In A. D. 894 the Danes were again in Devonshire; those of them whom Alfred had settled in East Anglia and Northumbria, induced by Hastings, who was then infesting England, took ship, and sailing round the headlands of Kent and along the Channel, besieged Exeter; but on the approach of Alfred's army they fled to their ships.

The great battle of Brunanburh, which has been usually placed in Northumberland, has been by others supposed to have been fought near Axminster in Devonshire. This decisive conflict gave to Athelstan the undisputed possession of England, and a nominal supremacy over Wales and Scotland. Axminster is supposed to have derived its present name from a college of priests founded here by Athelstan, to pray for the souls of those who fell in the conflict, and who were buried in the cemetery of Axminster: there were five kings and eight earls among them.

In A. D. 997 the Danes came up the Tamer, ravaged the country up to Lidford, and burnt Tavistock Abbey: in A. D. 1001 they landed at Exmouth and besieged Exeter, but in vain: they however defeated the king's army, and burnt several villages. In A. D. 1003 they again besieged Exeter, took it through the treachery or negligence of the governor, and nearly destroyed it.

When William of Normandy attacked England, his second campaign was in the west. Exeter yielded on his approach. In the next two years, when the Saxons of the neighbourhood rose in revolt, or rather renewed the struggle for independence, under the sons of Harold, who had fallen at Hastings, the citizens refused to admit them. William sent some troops to relieve the city, and the Saxons were defeated with great slaughter.

The coasts of Devonshire were, about this time, laid waste by the Irish, and the civil broils which arose during the next hundred years between the children and descendants of the Conqueror rendered Devonshire the scene of contest. The succeeding centuries are marked by few historical events, except occasional attacks by the French on the towns on the coast, and some contests of inferior moment during the wars of the Roses. The nobility of the county were divided between the rival houses; the Courtenays, earls of Devon, were Lancasterians, and three brothers who successively enjoyed the title, fell in the field or died on the scaffold.

In the rebellion of the Cornish men under Lord Audley and Flammock [CORNWALL], and in the rebellion under Perkin Warbeck, Exeter was the object of attack, but in both cases the attack failed. The last siege was raised by Courtenay, earl of Devon, attended by several Devonshire knights, and the *posse comitatus*. Warbeck retired to Taunton.

Of the troubled periods to which the foregoing sketch refers, Devonshire contains several memorials in the baronial castles, the ruins of which are still in existence. At Exeter, Plympton, Oakhampton, and Tiverton were castles, all of which belongd to the Courtenays. [EXETER; TIVERTON.] Some of the walls of the keep of Plympton castle yet remain; and some scanty ruins of that of Oakhampton. Berry Pomeroy castle, near Totness, is an antient mansion on the brow of a steep hill in a well wooded country; it was the seat first of the Pomeroys, afterwards of the Seymours; [BERRY POMEROY.] Compton castle near Torbay, and Afton castle near Chulmleigh, are still standing and converted into farm-houses; and there are remains of Gidley castle; Hemyock castle, near the upper waters of the Culm; Dartmouth castle; Kingswear castle, near Dartmouth; and Lidford castle, formerly the stannary prison, between Tavistock and Oakhampton. Of antient mansion houses, Dartington near Totness, built in the reign of Richard II., about the end of the fourteenth century, and an old mansion at Bradley near Newton Bushel, built in the fifteenth century, are among the most remarkable.

When the alteration of the church service took place at the Reformation, A. D. 1549, great disturbances broke out in Devonshire. They began at Sampford Courtenay, between Oakhampton and Chulmleigh, and gradually assumed a serious aspect, as some of the gentry joined in the revolt. The spirit of disaffection spread into Cornwall. Exeter was besieged by the rebels; and it was not until several severe actions had taken place, that Lord Russell, who had been sent down to suppress the revolt, succeeded in doing so. In 1554 Exeter was occupied by Sir Peter and Sir Gawen Carew, who had taken up arms to oppose the coming of Philip of Spain.

Of the monastic establishments of Devonshire, Tavistock Benedictine Abbey; Buckland, Buckfastre, Dunkeswell, Ford, and Newenham, Cistertian abbeys; Plympton and Hertland, the former a priory and the latter an abbey of Augustinian canons; and Tor abbey for Premonstratensian canons, were the chief. The ruins of these buildings are inconsiderable: the chapel and other parts of Ford abbey on the river Axe; the refectory and abbot's hall and the gate-house at Tavistock; part of the conventual church of Tor abbey; and some remains of Buckland, Hertland, and other establishments are yet standing. There are considerable remains of St. Nicholas's priory at Exeter; the crypt which has massive Norman arches has been converted into a kitchen.

In the great civil war of Charles I. the county seems generally to have embraced the cause of the parliament. Plymouth was seized by the townsmen during the absence of the governor appointed by the king, and the earl of Ruthen was soon after made governor. Exeter was the head-quarters of the earl of Stamford, the parliamentary general. The defeat of the parliamentarians at Bradock Down, near Liskeard, [CORNWALL] early in 1643, raised the confidence of the royalists, but they suffered some severe checks in different parts of the country, and the predominance of the parliamentarians was restored. The defeat of Lord Stamford at Stratton [CORNWALL], 16th May, 1643, again turned the current in favour of the royalists, whose superiority was confirmed by the arrival and activity of Sir John Berkeley, sent with a reinforcement by the king, and by the subsequent arrival of Prince Maurice, the king's nephew. The royalists besieged Exeter, which the earl of Warwick who commanded the fleet for the parliament was unable to relieve. Colonel Digby, a royalist, defeated the parliamentarians at Torrington; and Barnstaple, Bideford, and a strong fort at Appledore, which were held for the parliament, surrendered. Exeter also was compelled to surrender about the same time. Had Prince Maurice marched to Plymouth, he might perhaps have gained possession of that important station, then the greatest trading port in the west of England, but he lost a month in besieging Dartmouth, which he took; his troops were diminished by sickness, and the garrison at Plymouth was reinforced. When the town was at last blockaded it was without success; two assaults made in December, 1643, were repulsed; and the siege was for a time abandoned. In the spring of 1644, several fresh attempts were made upon it, but with no better fortune. In 1644 the earl of Essex with his army reached Devonshire, but no great or decisive event took place, until Essex marched into Cornwall, where his infantry was obliged to capitulate to the king, who had followed him thither. [CORNWALL.] The king, returning from Cornwall, summoned Plymouth to surrender; and on its refusal, Sir Richard Grenville was left to carry on the siege. In January, 1645, Sir Richard made an assault, which was repulsed, and the remainder of the year was marked by a series of disasters, which may be in no small degree ascribed to the misconduct and dissensions of the king's generals. In October, 1645, Sir Thomas Fairfax, commander-in-chief for the parliament, entered the county with his army, and in the course of the following winter and spring entirely put down the opposite party. Mount Edgecumbe surrendered on the 21st April, 1646, and was the last post held for the king in Devonshire, except Charles fort at Salcombe Regis, which did not surrender till the following June.

At the revolution of 1688, the Prince of Orange landed in Torbay, November 5th: on the 8th he made a public entry into Exeter, where he remained for some days before any of the principal people of the county joined him: on the 21st he quitted Exeter on his march to London. A small garrison under the command of Sir Edward Seymour was placed in Exeter.

Teignmouth was burnt by the French, A.D. 1690. In 1719, upon the apprehension of a French invasion, an encampment was formed on Clist Heath, four or five miles north-east of Exeter. In 1779 the appearance of the combined French and Spanish fleets off Plymouth caused great alarm, and the prisoners of war were removed to Exeter. In 1798, upon the alarm of a French invasion, several regiments of volunteers were raised, artillery was brought from Plymouth for the defence of Exeter, and placed in an antient intrenchment on Woodbury Down, a few miles south-east of Exeter, where a camp was formed. Similar measures were taken upon the renewal of the alarm in 1803.

STATISTICS.

Population.—Devonshire is an agricultural county; it has but few manufactures, but many of its inhabitants are employed in quarrying stone, or in obtaining some other of the valuable minerals it contains. It ranks the twenty-fourth on the list of agricultural counties, and in this respect has remained stationary since 1811. Of 116,188 male inhabitants twenty years of age and upwards, in 1831, 47,995 were engaged in agricultural pursuits, 35,311 of whom were labourers; only 1,221 were employed in manufactures or in manufacturing machinery; and there were 14,307 labourers not agricultural. Of those employed in manufactures about 700 were engaged in the woollen manufacture, and were distributed at Axminster, Ashburton, Buckfastleigh, Chagford, Cullumpton, North and South Molton, and at North Tawton; glove-making employs about 70 at Great Torrington; lace-making about 70 at Barnstaple, Pilton, and Tiverton; the rest are too miscellaneous for particular description. About 90 are employed in different manufactures in the city of Exeter.

The population of Devonshire, at each of the four enumerations during the present century, was:—

	Males.	Females.	Total.	Inc. per cent.
1801	157,240	185,761	343,001	
1811	179,553	203,755	383,308	11·75
1821	208,229	230,811	439,040	14·54
1831	235,789	258,689	494,478	12·55

Showing an increase between the first and last periods of 151,477, or a little more than 44 per cent., which is 13 per cent. below the whole rate of increase throughout England.

The following table is a summary of the population, &c., of every hundred, as taken at the census of 1831:—

HUNDREDS, &c.	HOUSES.				OCCUPATIONS.			PERSONS.			
	Inhabited.	Families.	Building.	Uninhabited.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	All other families not comprised in the two preceding classes.	Males.	Females.	Total of persons.	Males twenty years of age.
Axminster	2,648	2,928	24	92	1,300	905	723	6,878	7,061	13,939	3,336
Bampton	1,316	1,523	11	52	710	463	350	3,560	3,440	7,000	1,773
Black Torrington	3,337	3,590	47	131	2,595	628	367	9,911	9,581	19,492	4,675
Braunton	3,941	4,449	58	214	1,366	1,674	1,409	10,313	11,661	21,974	5,088
Budleigh, East	3,896	4,244	40	269	1,444	1,256	1,544	9,257	11,009	20,266	4,550
Budleigh, West	560	580	4	16	419	130	31	1,579	1,468	3,047	794
Cliston	627	694	10	20	472	139	83	1,788	1,694	3,482	939
Coleridge	3,119	4,223	29	160	1,316	1,585	1,322	9,618	10,721	20,339	4,530
Colyton	1,431	1,538	15	66	725	391	422	3,643	3,731	7,374	1,785
Crediton	2,417	2,554	31	108	1,141	1,020	393	5,823	6,414	12,237	2,864
Ermington	1,835	1,984	22	113	1,161	543	280	5,293	5,231	10,524	2,626
Exminster	3,187	3,472	33	207	1,223	1,273	976	8,560	9,672	18,232	4,055
Fremington	1,672	1,746	17	93	880	493	373	4,318	4,526	8,844	2,040
Halberton	525	626	3	14	356	156	114	1,405	1,461	2,866	723
Hartland	849	913	4	27	591	175	147	2,332	2,314	4,646	1,099
Hayridge	2,660	2,945	21	117	1,370	1,102	473	6,755	6,689	13,444	3,429
Haytor	4,370	4,830	81	263	1,580	1,559	1,691	11,166	12,977	24,143	5,134
Hemyock	1,105	1,217	14	42	673	306	238	2,917	2,890	5,807	1,449
Lifton	2,259	2,524	22	80	1,435	540	549	6,908	6,539	13,447	3,611
Molton, South	2,626	2,752	36	114	1,305	694	753	6,779	7,046	13,825	3,352
Ottery St. Mary	738	856	5	23	296	258	302	1,847	2,002	3,849	863
Plympton	1,575	1,927	16	61	620	438	869	4,949	4,868	9,817	2,433
Roborough	1,862	2,077	14	121	1,146	406	525	5,433	5,463	10,896	2,615
Shebbear	3,829	4,004	48	259	1,803	874	1,327	9,670	10,489	20,159	4,452
Sherwell	789	820	6	33	579	149	92	2,103	2,083	4,186	1,094
Stanborough	2,573	2,746	20	132	1,406	885	455	7,154	7,367	14,521	3,479
Tavistock	1,006	1,337	3	43	263	369	705	3,325	3,629	6,954	1,659
Tawton, North, with Winkley	2,370	2,585	27	134	1,441	714	430	6,499	6,923	13,422	3,152
Teignbridge	2,427	2,810	17	131	1,376	854	580	7,169	7,296	14,465	3,542
Tiverton	1,988	2,165	18	61	671	1,185	309	4,950	5,569	10,519	2,509
Witheridge	1,779	1,886	18	105	1,286	426	174	4,955	4,612	9,567	2,518
Wonford	4,785	5,493	113	227	2,214	1,611	1,668	13,206	14,213	27,419	6,676
Exeter, {city and county of the same}	4,056	6,038	80	279	105	3,004	2,929	12,683	15,559	28,242	6,573
Plymouth, {borough and suburbs}	7,842	17,835	474	413	237	7,134	10,464	33,043	42,491	75,534	16,771
Totals	81,999	101,911	1,381	4,220	35,505	33,339	33,067	235,789	258,689	494,478	116,188

County Expenses, Crime, &c.—The sums expended for the relief of the poor at the four dates of

		£.		s.	d.	
1801	were	124,022,	which was	7	2	for each inhabitant.
1811	„	217,757	„	11	4	„
1821	„	207,686	„	9	5	„
1831	„	233,074	„	9	0	„

The sum expended for the same purpose in the year ending March 25, 1836, was 172,405*l.* 16*s.*; and assuming that the population had increased at the same rate of percentage since 1831 as in the ten years preceding that period, the above sum gives an average of 6*s.* 5¼*d.* for each inhabitant. These averages are below those for the whole of England and Wales.

The sum raised in Devonshire for poor's rate, county-rate, and other local purposes, in the year ending the 25th of March, 1833, was 260,320*l.* 10*s.*, and was levied upon the various descriptions of property as follows:—

	£.	s.
On land . . .	190,707	11
Dwelling-houses . .	60,408	17
Mills, factories, &c. .	5,404	2
Manorial profits, navigation, &c.	3,800	0
	260,320	10

The amount expended was:—

	£.	s.
For the relief of the poor . .	226,891	11
In suits of law, removal of paupers, &c.	8,030	19
For other purposes . . .	28,518	2
	263,440	12

In the returns made up for the subsequent years, the descriptions of property assessed for local purposes are not distinguished: 250,270*l.* 4*s.*, 231,766*l.* 6*s.*, and 212,691*l.* 2*s.* were raised in the years 1834, 1835, and 1836 respectively, and the expenditure of each year was as follows:—

	1834.		1835.		1836.	
	£.	s.	£.	s.	£.	s.
For the relief of the poor . . .	210,825	8	189,917	3	172,405	16
In suits of law, removals, &c. . .	7,507	8	6,251	2	6,108	2
Payment for or towards the county rate	26,539	0	15,188	12	15,149	9
For all other purposes . . .			18,051	11	16,390	4
Total money expended . .	244,871	16	229,408	8	210,053	11

The saving effected in the whole sum expended in 1836, as compared with the expenditure of 1834, is therefore rather more than 15 per cent.; but the saving on the sum expended for the relief of the poor is about 18¼ per cent. in 1836, as compared with the expenditure of 1834.

The number of turnpike trusts in Devonshire is 28, as ascertained in 1834; the number of miles of road under their charge was 782; the annual income of that year, arising from the tolls and parish composition, was 61,374*l.* 12*s.* 11*d.*, and the annual expenditure 61,786*l.* 17*s.* 1*d.*

The county expenditure in 1834, exclusive of that for the relief for the poor, was 14,733*l.* 14*s.* 11*d.*, disbursed as follows:—

	£.	s.	d.
Bridges, buildings, and repairs, &c. .	2,851	2	5
Gaols, houses of correction, &c., and maintaining prisoners, &c. .	4,720	15	4
Shire halls and courts of justice—building, repairing, &c. .	265	5	1
Lunatic asylums . . .	181	19	6
Prosecutions . . .	3,517	17	5
Clerk of the peace . . .	682	2	7
Conveyance of prisoners before trial .	819	15	5
,, of transports . .	210	16	6
Vagrants—apprehending and conveying	147	10	0
Constables—high and special .	16	8	10
Coroner	459	16	11
Miscellaneous . . .	860	4	9

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were 2847, 2741, and 3106 respectively; making an average of 335 annually in the first period, of 391 in the second, and of 443 in the third. The number of persons tried at quarter-sessions in each of the years 1831, 1832, and 1833, in respect to which any costs were paid out of the county rates, were 230, 258, and 193 respectively. Among the persons charged with offences, there were committed for—

	1831.	1832.	1833.
Felonies . . .	212	245	185
Misdemeanors . .	18	13	8

The total number of committals in each of the same years was 203, 248, and 194, respectively.

	1831.	1832.	1833.
The number convicted was .	144	195	139
„ acquitted .	71	42	28
Discharged by proclamation	35	37	34

In 1835, at the assizes and sessions 518 persons were charged with crimes in Devonshire; of which number 55 were charged with offences against the person, 37 of which were common assaults; 19 for offences against property, committed with violence; 401 for offences against property, committed without violence; 10 for arson; 1 for forgery; and 13 for uttering counterfeit coin; 9 for riot and prison breaking; and 10 for misdemeanors. Of the whole number committed, 326 were convicted, and 191 acquitted, or no bill was found. Of those convicted, 29 were transported for life, 15 for 14 years, and 48 for 7 years; 1 was to be imprisoned for 3 years and above 2 years, 2 for 2 years and above 1 year, 31 for one year and above 6 months, and 192 for 6 months or under; 2 were whipped, 4 fined, and 1 discharged on sureties. Of the offenders, 381 were males, and 137 females. Of the whole number of offenders, 193 could read and write, 176 could read only, 122 could neither read nor write, and the degree of instruction of 27 could not be ascertained.

The number of persons qualified to vote for the county members of Devonshire is 18,835, being 1 in 26 of the whole population, and 1 in 6 of the male population, 20 years of age and upwards, as taken in 1831. The expenses of the last election of county members to parliament were to the inhabitants of the county 139*l.* 15*s.* 2*d.*, and were paid out of the general county rate.

There are five savings-banks in Devonshire. The number of depositors, and amount of deposits on the 20th November, were respectively in—

	1832.	1833.	1834.	1835.
Number of depositors	26,996	28,521	30,264	31,973
Amount of deposits .	£863,290	897,028	947,326	1,001,628

The various sums placed in the savings-banks in 1834 and 1835 were distributed as follows:—

		1834.		1835.	
		Depositors.	Deposits.	Depositors.	Deposits.
Not exceeding	£20	16,968	£106,335	17,983	£113,706
„	50	7,396	228,941	7,739	240,467
„	100	3,543	246,202	3,757	260,826
„	150	1,347	163,072	1,402	169,312
„	200	680	119,499	738	129,109
Above	200	330	83,277	354	88,208
Total . .		30,264	£947,326	31,973	£1,001,628

Education.—The following particulars are obtained from the parliamentary returns on education made in the session of 1835:—

	Schools.	Scholars.	Total.
Infant Schools	117		
Number of infants at such schools; ages from 2 to 7 years:—			
Males . . .		770	
Females . .		838	
Sex not specified		923	
			2,531
Daily Schools	1,772		
Number of children at such schools, ages from 4 to 14 years:—			
Males . . .		14,163	
Females . .		19,596	
Sex not specified		18,681	
			52,440
Schools . .	1,889		
Total of children under daily instruction .			54,971

Sunday Schools	599	
Number of children at such schools, ages from 4 to 15 and 16 years:—		
Males	16,262	
Females . . .	17,952	
Sex not specified	9,128	
		43,342

Assuming that the population between 2 and 15 years increased in the same ratio as the whole of the population between 1821 and 1831, and has continued to increase in the same ratio since, the number between those ages living in Devonshire in 1834 must have been 163,256. A large number of the scholars attend both daily and Sunday schools. Fifteen Sunday-schools, containing only 433 scholars, are in places where no other schools are established, but in all other places where schools are returned there are both Sunday and daily schools. Ninety-four schools are Sunday as well as daily schools, and are attended by 5788 children, and duplicate entry is known thus far to be created, but in what greater number cannot be well ascertained. Making allowance therefore for the probable great diminution of the number of children returned as receiving instruction, perhaps not more than half of the population between 2 and 15 are receiving instruction in Devonshire.

Maintenance of Schools.

Description of Schools.	By endowment.		By subscription.		By payments from scholars.		Subscrip. and payment from scholars	
	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.	Schls.	Scholars.
Infant Schools	1	10	6	261	98	1,648	12	612
Daily Schools	163	4756	140	7814	1308	33,776	111	6094
Sunday Schools	14	1069	526	39,181	14	390	45	2702
Total.	178	5835	572	47,256	1420	35,814	168	9408

The schools established by Dissenters, included in the above statement, are:—

	Schools.	Scholars.
Infant Schools	2	50
Daily "	25	1026
Sunday "	171	17,270

The schools established since 1818 are:—

Infant and other daily schools	809	26,313
Sunday Schools	476	33,950

Eighty-three boarding-schools are included in the number of daily schools given above. No school in this county appears to be confined to the children of parents of the Established Church, or of any other religious denomination, such exclusion being disclaimed in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists, together with schools for the children of Roman Catholic parents.

Lending libraries of books are attached to 100 schools in this county.

DEW is the moisture which, when the surface of the ground is colder than the atmosphere, is deposited from the air, in the form of minute globules, on the surfaces of bodies in contact with it. The difference of temperature which exists between day and night produces a variation in the quantity of water which the air contains. The water, when precipitated from the air instead of appearing as a vapour, is deposited on the earth in minute globules, and the air preserves its transparency; this constitutes a difference between fog and dew. When the air contains so little moisture that it can retain it during the lower temperature of the night, no dew is formed.

It is difficult to pronounce as to the whole of the causes which produce dew; but the principal cause is the cooling of the air: when the cold is extremely great the dew freezes and then produces what is called hoar-frost.

It is remarked by Aristotle* and by other writers that dew appears only on calm and serene nights. This observation, according to Dr. Wells, is not to be received in its strictest sense, as he has frequently found a small quantity of dew on grass, both on windy nights, if the sky was clear or nearly so, and on cloudy nights, if there was no wind. If, indeed, the clouds were high, and the weather calm, he has sometimes seen on grass, though the sky was entirely hidden, no very inconsiderable quantity of dew. Again, stillness of the atmosphere is so far from being necessary for the formation of this fluid, that its quantity has seemed to Dr. Wells to be increased by a very gentle motion in the air: but he says, 'I can aver, after much experience, that I never knew dew to be abundant, except in serene weather,' and 'dew has never been seen by me on nights both cloudy and windy.*'

Dr. Wells remarks that, during nights which are equally clear and calm, dew often appears in very unequal quantities, even after due allowance has been made for any difference in their lengths: thus it is more abundant shortly after rain than during a long season of dry weather. It is generally more abundant during southerly and westerly winds than those which blow from the north and the east; but this remark, of course, only applies to particular localities. To the greater or less quantity of moisture in the atmosphere, at the time of the action of the immediate cause of dew, are likewise to be referred several other facts respecting its copiousness; these are thus stated by Dr. Wells (p. 10):

'In the first place, dew is commonly more plentiful in spring and autumn than in summer; the reason is, that a greater difference is generally found between the temperatures of the day and the night in the former seasons of the year than in the latter. In spring this circumstance is prevented often from having a considerable effect by the opposite influence of northerly and easterly winds; but during still and serene nights in autumn dew is almost always highly abundant.

'In the second place, dew is always very copious on those clear and calm nights which are followed by misty or foggy mornings: the turbidness of the air in the morning showing that it must have contained during the preceding night a considerable quantity of moisture.

'Thirdly, I have observed dew to be unusually plentiful on a clear morning which had succeeded a cloudy night. For the air having, in the course of the night, lost little or no moisture, was in the morning more charged with watery vapour than it would have been if the night had also been clear.

'Fourthly, heat of the atmosphere, if other circumstances are favourable, which, according to my experience, they seldom are in this country, occasions a great formation of dew. For, as the power of the air to retain watery vapour in a pellucid state increases considerably faster, while its temperature is rising, than in proportion to the heat acquired, a decrease of its heat, in any small given quantity, during the night, must bring it, if the temperature be high, much nearer to the point of repletion before it be acted upon by the immediate cause of dew, than if the temperature were low.

'In the last place, I always found, when the clearness and stillness of the atmosphere were the same, that more dew was formed between midnight and sunrise than between sunset and midnight, though the positive quantity of moisture in the air must have been less in the former than in the latter time, in consequence of a previous precipitation of part of it. The reason, no doubt, is the cold of the atmosphere being greater in the latter than in the prior part of the night.'

With respect to the cause of dew different opinions have been entertained. Aristotle (*Meteor.* i. 10) supposed dew to be a species of rain formed in the lower atmosphere in consequence of the moisture which had been carried up during the day by evaporation being condensed by the cold of the night into minute drops. In 1788 Mr. Wilson of Glasgow published a paper on hoar-frost in the Transactions of the Royal Society of Edinburgh, in which he supposes that cold is occasioned by the formation of the dew. In the course of the same year Mr. Six communicated a paper to the Royal Society in which he imagines that dew proceeds partly from the low temperature of the air through which the dew already formed in the atmosphere had descended, and partly from the evaporation of moisture from the ground, on which his thermometer had been placed.

In a subsequent and posthumous work printed in 1794, the cold of the grass is however attributed, in agreement with the opinion of Mr. Wilson, altogether to the dew deposited upon it. Mr. Wilson and Mr. Six observed, that the production of dew is accompanied with cold on the surface of the ground greater than in the atmosphere a few feet above, the differences being frequently 5, 10, or even more degrees of Farenheit's scale. This cold, as has just been mentioned, was considered as the effect of the formation of the dew, though this conclusion involved a very considerable difficulty; for as the transition of a body from the

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* Meteor. lib. i. c. x. et De Mundo, c. iii.

* Wells on Dew, 65.

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state of vapour to the fluid or solid form is always accompanied with an evolution of heat, it might be expected that the surface on which the dew is deposited, and still more that on which the hoar frost is formed, would have its temperature raised, and no cause appears why it should be depressed.

Dr. Wells, however, after verifying the facts observed, ascertained by numerous observations and experiments, that the cold at the surface, compared with that of the air above, precedes the formation of dew, and often exists without dew being formed; and that bodies become colder than the neighbouring air before they are dewed. The cold therefore which Mr. Wilson and Mr. Six supposed to be the effect of dew was found by Dr. Wells to be the cause of it.

The question then naturally arises, what are the causes which produce this low temperature of the earth, while the incumbent air is at a higher temperature? This is shown by the experiments and reasoning of Dr. Wells to be caused by the radiation of heat without an equivalent return. The surface of the ground allows a portion of the heat which it receives from the solar rays to escape by radiation when their action is withdrawn: hence its temperature falls; and if the air, holding watery vapour dissolved, rest upon it without much agitation (a circumstance by which, as the constant renewal of warm air imparts heat, the effect would be counteracted), a portion of the vapour will be condensed on the surface, and if the temperature is still lower, will be congealed: thus it is that dew and hoar-frost are formed only when the atmosphere is clear, for the clouds return an equivalent portion of radiant heat.

Dew forms in very different quantities on different substances under the same circumstances; thus on metals it is sparingly deposited; on glass it forms abundantly, as it does also on straw, grass, cloth, paper, and other similar substances. Now as the metals radiate heat imperfectly, and the other bodies mentioned in a much greater degree, they become consequently colder than the metals, and hence condense more vapour into dew.

Animal substances are among those which acquire dew in the greatest quantity; among these Dr. Wells found that swan's-down exhibited the greatest degree of cold in general, and was also most easily managed, as it was used while adhering to the skin of the bird. On other occasions wool was employed, and the following statements are the results of Dr. Wells's experiments with respect to the influence which several differences in the situation, mechanical state, and real nature of bodies have upon the production of dew.

A general fact is, that whatever diminishes the view of the sky, as seen from the exposed body, occasions the quantity of dew which is formed upon it to be less than would have occurred if the exposure to the sky had been complete; two parcels of wool, each weighing ten grains, were placed, one on the middle of a board, and the other to the middle of the underside; the two parcels were an inch asunder, and equally exposed to the action of the air: on weighing the two portions, it was always found that the upper portion had acquired most dew, the greatest difference being twenty grains to four grains.

The following is a tabular view of observations with respect to temperature made by Dr. Wells on the evening of the 19th of August, 1813:—

	6h. 45m.	7h.	7h. 20m.	7h. 40m.	8h. 45m.
Heat of air 4 feet above the grass . . .	60½°	60½°	59°	58°	54°
„ wool on a raised board . . .	53½	54½	51½	48½	44½
„ swan's-down on the same . . .	54½	53	51	47½	42½
„ surface of the raised board . .	58	57	55½	..	..
„ grass plat . .	53	51	49½	49	42

Sir Robert Barker and Mr. Williams have both given accounts of the process by which ice is formed in Bengal, while the temperature of the air is above 32°; and its production was attributed, by the former altogether, and by the latter in great measure, to cold produced by evaporation. Dr. Wells's experiments however show not only that the evaporation which occurs is insufficient to account for the effect, but that the cold produced by radiation alone will satisfactorily explain it. On the subject of cold produced by radiation, Dr. Wells makes the following curious statement:—'I had often,' he says, 'in the pride of half knowledge, smiled at the means frequently employed by gardeners to protect tender plants from cold, as it appeared to me impossible that a thin mat, or any such flimsy substance, could prevent them from attaining the temperature of the atmosphere, by which alone I thought them liable to be injured. But, when I had learned that bodies on the surface of the earth become during a still and serene night colder than the atmosphere by radiating their heat to the heavens, I perceived immediately a just reason for the practice which I had before deemed useless.' And he follows up this part of the subject by relating some extremely simple experiments in proof of the efficacy of the practice, and in explanation of the effect by the processes of radiation and reflexion of heat.

DEWBERRY, a kind of bramble, the *Rubus cæsius* of botanists, so named because its black shining fruit is covered over by a fine waxy white secretion resembling dew. It forms the type of one of the sections of the European part of the genus *Rubus*, the systematic character being digitate leaves, downy or hairy leafstalks or stems, leaflets green on the under side, and calyx standing erect about the fruit.

DEWSBURY a market-town, parish, and township in the West Riding of the county of York, in the wapentake of Aggbrigg and Morley, and in the liberty and manor of Wakefield. It is 5 miles west of Wakefield, 8 miles south-west of Leeds, 33 south-west of York, and 187 north-west of London. The antient importance of Dewsbury is connected more with ecclesiastical than with civil history. In the time of the Saxons it was one of the most extensive parishes in England, and comprised an area of 400 square miles, including the present parishes of Thornhill, Burton, Almondbury, Kirkheaton, Huddersfield, Bradford, Mirfield, and Halifax. Dewsbury was the centre from which Christianity was diffused through this part of the island in Saxon times. The name is supposed by some to have been derived from its first Saxon proprietor; others consider that the success of the preaching of Paulinus, the first archbishop of York, caused the place of his residence to be called Duisborough, God's town. The remains of Saxon tombs are still to be seen in the vicarage garden, near the church. Other relics of the same people have also been found, the most remarkable of which exhibits the Saviour in the act of bestowing his benediction. At the east end of the chancel, placed on a cross on the outside of the church, is the following inscription: 'Paulinus hic prædicavit et celebravit, A.D. 627.' This is not the identical Saxon wheel-cross, but a fac-simile of it. The church is the mother-church of the district, several neighbouring parishes acknowledging their original dependence by their prescriptive payments. No appearance of Saxon architecture is presented in the existing edifice, which comprises a nave and aisles; a chancel; an octagonal vestry on the north side; and a tower finished with pinnacles at the west end. The living is a discharged vicarage; it is endowed with 200*l.* private benefactions, and 200*l.* royal bounty. Its average gross income is 238*l.* per annum; it is in the patronage of the crown. There is a second church in the township of Dewsbury, which was erected by the parliamentary commissioners in 1827; the dissenting places of worship in the township are, two for Wesleyan Methodists, one for the New Connexion Methodists, one for Primitive Methodists, one for Independents, and one for Quakers; there are several other dissenting chapels in the parish.

The public educational establishments at Dewsbury are Wheelwrights' Charity, a school recently erected under a decree of the Court of Chancery at an expense of 600*l.*, for the instruction of 100 boys and 100 girls on the national system; the Dewsbury charity school, containing 100 boys, which has an endowment of 100*l.* per annum (the master's salary is 80*l.* a year); an infants' school; and several daily-schools. The Sunday-schools of Dewsbury are attached to different places of worship, and instruct about 1500 children.

The town is pleasantly situated at the base of a hill rising from the river Calder. It has several good streets, and is lighted with gas. As a place of manufacture it is rising in importance, and its factories furnish large supplies of blankets, woollen cloths, and carpets. Coal is abundant in the neighbourhood; and the water of the Calder has a high reputation for its fulling properties. The commercial facilities of the town are increased by good roads; and the communication by water is, eastward by the Calder navigation, and westward by the Calder and Huddersfield canal. Thus access is obtained to Wakefield, Leeds, Selby, and Hull; and by Huddersfield to Manchester, Rochdale, Liverpool, and the other commercial towns in Lancashire. The population of the parish of Dewsbury is as follows: Dewsbury 8272; Osset 5325; Soothill 3849; Hartshead-cum-Clifton 2408; making a total of 19,854. The population of the parish in 1821 was 16,261. The market-day at Dewsbury is Wednesday. There are three fairs in the course of the year. Ossett is a large manufacturing township, midway between Dewsbury and Wakefield; it has a chapel of ease to Dewsbury, and several dissenting places of worship. In the township of Soothill are two villages, called Earls' Heaton and Hanging Heaton, each of which have churches which were erected in 1825-7 by the parliamentary commissioners. Hartshead-cum-Clifton is in the wapentake of Morley; it has a chapel of ease to Dewsbury, in a fine situation, commanding an extensive view of the vale of the Calder. In this township the tomb of the notorious freebooter, Robin Hood, is pointed out. Whether he was an outlaw of noble parentage or of humble birth is not clear; the epitaph upon his tomb designates him as 'Robert, earl of Huntingdon.' (Baines's *Directory of Yorkshire*; Allen's *History of Yorkshire*.)

DE WITT, JOHN, was born at Dort, in the province of Holland, in September, 1625. His father was burgomaster of his native town, and member of the states of Holland, in which capacity he was an opponent of the House of Orange, whose power and influence had been looked upon with jealousy ever since the time of Barneveldt by a considerable party in that province. [BARNEVELDT.] John de Witt, who inherited his father's principles, was made in 1652 grand pensioner of Holland, an office which gave him great influence over the deliberations of the States General or Federal Assembly of the Seven United provinces, in which the vote of the rich and populous province of Holland generally carried with it that of the majority. The time appeared favourable to the anti-Orange party. William II. of Orange, the last stadtholder, had died in 1650, and his posthumous son, afterwards William III. of England, was an infant. The object of De Witt and his party was to prevent in future the union of the offices of stadtholder, captain-general, and high-admiral in one and the same person, which had rendered the princes of the House of Orange almost equal to sovereigns, and which was certainly inconsistent with the title of a republic, assumed by the united provinces. It must however be observed, that each of these provinces, forming a separate state, was in fact governed by an aristocracy, the respective states or legislature of each consisting of the nobles, and the deputies of the principal towns, who were elected by the wealthier burghers; the great majority of the people having no share in the elections. Generally speaking then, the so-called republican party, at the head of which were successively Barneveldt and De Witt, struggled for the continuation or extension of their collective power against the House of Orange, whose influence tended to establish a form nearly monarchical. But that House was popular with the lower classes, and was supported by the majority of the clergy. The nature of the institutions of the United Provinces may be seen in the Act of Union of Utrecht, which was their declaration of independence. During the minority of William III., the office of stadtholder was considered as abolished, and the States General exercised the supreme authority: De Witt was the soul of their deliberations, and he managed, especially the foreign relations of the country, with great ability. He negotiated the peace with Cromwell in 1654, by a secret article of which it was agreed that no member of the House of Orange should be made stadtholder or high admiral. After the restoration of Charles II., De Witt dreading the family connexion between him and young William, sought the alliance of France in 1664. A war broke out between England and the United Provinces, which was at first favourable to the English, but De Witt, by his firmness and sagacity, repaired the losses of his countrymen; and while negotiations for peace were pending, he hastened their conclusion by sending an armament under Ruyter, which entered the Thames and burnt some of the English shipping in the Medway. This was followed by the peace of Breda, July, 1667. The encroaching ambition of Louis XIV., who aimed at taking possession of the Spanish Netherlands, now excited the alarm of De Witt, who hastened to form a triple alliance with England and Sweden, in order to guarantee the possessions of Spain. In his anxiety to secure his country against the approach of the French,, he caused the treaty to be ratified by the States General at once, instead of first referring it, according to the provisions of the Federal Act, to the acceptance of the various provinces separately. This was a cause of violent obloquy against De Witt. While thus occupied with the foreign relations, he did not forego his plans concerning the internal policy of his country and the permanent exclusion of the Orange family from power. In 1667 the states of Holland, at his suggestion, passed 'a perpetual edict,' abolishing for ever the office of stadtholder. De Witt at the same time introduced the greatest order and economy into the finances of the province of Holland. But all De Witt's calculations, both foreign and domestic, were baffled by the intrigues with which Louis XIV. contrived in 1672 not only to detach Charles II. from the Dutch alliance, but to engage him in a counter-alliance with himself against Holland. The French armies now suddenly invaded the United Provinces, Louis XIV. entered Utrecht, and his troops were within a few miles of Amsterdam. There appears to have been great neglect on the part of the officers, civil and military, of the United Provinces, in not having taken measures for resistance, and especially in not having placed their fortresses in a state of defence; and the blame was chiefly thrown upon De Witt. In this emergency, William, the young prince of Orange, was called to the command of the forces, both by land and sea, but this did not satisfy the popular clamour. Cornelius de Witt, John's brother, who had filled several important stations, both civil and military, was accused, evidently through mere malignity, of having plotted against the life of William of Orange, was thrown into prison at the Hague, and tortured; but as he could not be convicted of the charge, was sentenced to banishment. His brother John, whose life had been already attempted by assassins, resigned his office, and went to the Hague in his carriage to receive his brother as he came out of prison. A popular tumult ensued, the furious mob forced its way into the prison, and murdered both brothers with circumstances of the greatest atrocity. Such was the end of this distinguished statesman, whose private character and simplicity were as exemplary as his abilities were high. He wrote his Memoirs, which were published in his lifetime, and in which there is much information on the political and financial condition of Holland at the time. (Cerisier, *Histoire des Provinces Unies*; Sir William Temple, *Observations on the United Provinces*; *the Netherland Historian*, 8vo., Amsterdam, 1675, &c.)

DEXA'MINE, a genus of amphipodous crustaceans established by Dr. Leach.

Generic character.—Antennæ three jointed, the last segment composed of a number of minute joints; first segment shorter than the second; *upper antennæ* longest. *Eyes* oblong, not prominent, inserted behind the superior antennæ. *Legs* fourteen; first and second pairs monodactyle, with a small compressed hand; other pairs furnished with simple claws. *Tail*, on each side, with three double styles; above, with one small style on each side. *Body*, (including the head) twelve jointed. (Leach.)

Example. *Dexamine spinosa.* Body shining, the ninth, tenth, eleventh, and twelfth segments produced into a spine; front produced and bent downwards between the antennæ. The first joint of the upper antennæ beneath towards their tips, have a little spine-like process. Length three-quarters of an inch. (Leach.)

Locality.—Dr. Leach says that it is very common on the southern coasts of England, and is often taken by the shore-net, or beneath stones amongst the rocks at low tide. The legs, he observes, are easily broken, which will account for Montagu's having described and figured it (Cancer, *Gammarus spinosus*) without the monodactyle hands.

DEXIA'RIÆ, a family of Dipterous insects of the section Creophilæ. This family, established by M. Robineau Desvoidy, is composed chiefly of Meigen's genus Dexia. The species may be distinguished from those of neighbouring groups by the greater length of their legs: the body is generally elongated and cylindrical, but sometimes thick, depressed, or rounded. The fore part of the head is, in most of the species, furnished with a ridge situated between the deep grooves in which the antennæ are placed: the antennæ are rather short, and the stylet is generally plumose: the eyes are separated in both sexes, and the males are usually larger than the females. These flies are of inoffensive habits: they are usually seen on flowers, the juices of which afford them nourishment.

The chief characters of the genera contained in the Dexiariæ are thrown into a tabular form by M. Macquart, in the following manner:—

Proboscis long. Genus 1. PROSENA. *St. Fargeau.*
Proboscis short.
Body cylindrical.
First posterior cellule of the wings closed.
Second and third joints of the antennæ of equal length.
Genus 2. ZEUXIA. *Meigen.*
Third joint of the antennæ longer than the second.
Genus 3. DINERA. *Desvoidy.*
First posterior cellule of the wings open.
Antennæ not extending to the epistoma.
Genus 4. DEXIA. *Meigen.*
Antennæ extending to the epistoma. Legs very long.
Genus 5. SCOTIPTERA. *Macquart.*
Body tolerably broad, depressed.
Fore part of the head arched (colours brilliant).
Genus 6. RUTILA. *Desvoidy.*
Fore part of the head flat (colours, black or yellow).
Stylet of the antennæ naked.
Genus 7. GYMNOSTYLA. *Macquart.*
Stylet of the antennæ covered with fine hairs.
Genus 8. OMALOGASTER. *Macquart.*

Of the genus *Prosena*, Macquart describes only two species, one of which inhabits Europe, and the other is from Brazil.

Of the genus *Zeuxia* but one species is known.

The genus *Dinera* contains five species, one of which inhabits Brazil, and the others are found in various parts of Europe.

The genus *Dexia* contains twelve species, almost all of which are European.

The genus *Scotiptera* contains two species; they are of considerable size, and inhabit Brazil.

Rutila.—The species of this genus appear to be confined to New Holland: they are generally of large size.

The genus *Gymnostyla* contains three species, two of which are from Brazil, and the third is from Surinam.

The last genus, *Omalogaster*, contains four species, all of which are inhabitants of Europe.

DEXTRINE, a name which has been given, but probably without sufficient cause, to a soluble portion of starch. [STARCH.]

DEY. The origin of the word dey is uncertain. Some have derived it from the Turkish *dāï*, 'a maternal uncle,' and have supposed that this designation was given to the chiefs of the states of Barbary to express their almost paternal authority in the Ottoman empire, and the high esteem in which they were held by the Porte. The name is at all events of more antient date than the Ottoman dominion in northern Africa, since we find it used as early as the end of the eleventh century as the title of the emissaries of the Assassins or Ismaelites. The dignity of dey in the states of Tunis, Tripoli, and Algiers, is not hereditary: on the death of a dey, his successor is chosen from among the highest civil and military authorities, with the concurrence of the Turkish troops stationed in each of the three states. He must be of a certain age and experience, and of acknowledged valour: formerly he was also required to be a Turk, and to have performed a pilgrimage to Mecca; but to this rule there have been many exceptions. On the election of a new dey, the mufti or high-priest of the state reminds him publicly of the duties of the office; and the sultan recognises his election by sending him a robe of honour and (since the beginning of the last century) by conferring the title of pasha upon him. Properly, the deys are vassals of the Porte; but greater privileges are conceded to them than to the governors of any other external province of the Ottoman empire, and in their conduct towards the Porte they have shown so much independence, that their allegiance to the grand seignior is almost nominal. In his own state the dominion of each dey is perfectly free from any control on the part of the Porte. He is elected for life; but the Porte pretends to reserve to itself the right of deposing him if he does not give satisfaction. In his administration the dey is assisted by a diwan, or privy council: but he frequently sets the advice of that body at defiance, and rules with despotic power. In the choice of a new dey much depends on the inclination of the army; and the election is seldom accomplished without bloodshed. The troops are the principal supporters of the dey; and if they are not paid punctually, or if any measure of the government gives them offence, they revolt, and the dey often loses both his throne and his life.

At Tunis we hear of an elective dey since about the year 1574, when Khâlif was invested with that dignity. Tripoli came into the possession of the Turks about 1551. It was till the end of the sixteenth century governed by pashas or lieutenants appointed by the Porte: from the year 1600 a line of elective deys commenced, the first of whom was Mohammed Beg, a Greek renegado. Algiers was subject to the Ottomans from 1516, and it continued to be governed by pashas sent from Constantinople till 1625. In the latter year a revolution ensued, which terminated, in 1628 in the recognition by the Porte of the first elected dey of Algiers, Haji Mohammed Aga. An officer appointed by the Porte, and bearing the title of pasha, continued to be sent by the grand seignior, in order to keep a watchful eye on the proceedings of the dey: but this system gave rise to constant jealousies between the two chiefs, and from 1710 both appointments became united, inasmuch as the Porte granted the rank of pasha to the dey himself, thus renouncing every right of interfering with the internal policy of the state. A similar arrangement was about the same time made in the state of Tripoli. [ALGIERS, TRIPOLI, TUNIS.]

DHALAC or **DAHALAC**, an island in the Red Sea, situate in 15° 53′ 50″ N. lat., and 40° 40′ 30″ E. long. Its extent from north-west to south-east is about thirty-five, and its breadth eighteen miles. It is the largest island in the Red Sea. It is low, and its surface level, being formed of coralline rocks covered with sand, but destitute of all herbage during the summer heat, except a small quantity of bent-grass just sufficient to feed the few antelopes and goats that are on the island. In many places there are large plantations of acacia trees, but they seldom attain above eight feet in height. There are no springs, and the rain water is preserved in cisterns. Bruce says there were 370 of them; Salt heard of 316, but it seems that their number is much smaller, though considerable, more than 120 having been seen by the officers of the Benares, during their late survey of the Red Sea. There are also some tanks. This island contains two harbours for small vessels, Dhalac el Kibeer and Dobelow. No kind of agriculture is carried on. According to Bruce, one-half of the male population of the island are always employed in work on the opposite shores of Arabia, and by their labour furnish their families with dhurra and other provisions; when their time is expired they are relieved by the other half. They are good seamen and fishermen. Very elegant baskets are made of the leaves of the doum-tree, and sent to Loheiha and Jidda. The island contains twelve villages, of from 50 to 100 houses each. (Bruce; Lord Valentia; Welsted in the *London Geogr. Journal*, vol. v.)

DHAR, an antient and formerly a very extensive city in the province of Malwa, in 22° 35′ N. lat., and 75° 24′ E. long. It covers a space three-quarters of a mile long, and half a mile broad, the whole surrounded by a mud wall thirty feet high, fortified with towers at intervals. The pettah or fort is detached from the city and stands on a rising ground. Dhar at one period covered a much greater extent of ground, and contained at least 20,000 houses; in 1820 they did not amount to one-fourth that number, but the town has somewhat increased since that time. The district in possession of the Dhar rajah comprehends about 400 square miles, and contains 179 villages, and about 40,000 inhabitants. When the English entered upon the occupation of Malwa in 1817, the whole revenue of the Dhar rajah, then a minor, was only 35,000 rupees, but in the course of a few years it was made to exceed 600,000. The most important article of cultivation is opium, but the soil is capable of yielding every kind of tropical production. A few of the villages are inhabited by Bheels; of the remaining population fifteen-sixteenths are Hindus, and the other sixteenth Mohammedans.

DIABE′TES, the discharge of a preternatural quantity of urine, the chemical composition of which is also essentially changed. In this disease the urine is not only unusually large in quantity, but it is either altogether destitute of several of its constituent principles, or it contains them only in very minute proportions, while it acquires a new ingredient, a quantity of sugar, which imparts to it a sweet taste. Medical writers are not agreed whether the impregnation of the urine with a sufficient quantity of saccharine matter to render it sweet to the taste be absolutely essential to the disease; it is therefore usually divided into two species, namely, *diabetes insipidus*, when there is discharged a preternatural quantity of urine which is perfectly insipid, and *diabetes mellitus*, when the unusual quantity of urine which is voided is sweet to the taste.

The discharge of a larger quantity of urine than natural, unaltered in its chemical constitution, may arise from numerous causes of a temporary nature, scarcely deserving the name of a disease, and certainly not forming a disease of a specific character. The term diabetes should therefore be restricted to that specific disease in which the secretion of urine is preternaturally increased, and its chemical composition at the same time essentially changed.

In diabetes, properly so called, the urine is generally so clear that it appears at first sight to be entirely without colour; but viewed in a certain light, it is seen to be slightly tinged with a yellowish green, or it is of a pale straw colour. Examined by the taste, it is almost invariably found to be more or less sweet; and when chemically analyzed, it is ascertained to contain, usually in considerable quantity, a saccharine matter, which is exactly of the nature of common sugar. Its odour likewise is peculiar; it is commonly compared to the faint odour of violets, or to that of sweet whey or milk. Its specific gravity commonly varies from 1,025 to 1,052. The principle peculiar to healthy urine, *urea*, is generally very much diminished in quantity, though the best chemists have never observed it to be altogether absent. There is, however, little or no lithic acid; it commonly contains the usual saline ingredients, but diminished in quantity; blood itself is sometimes, though very rarely, found in it; it far more frequently contains a considerable portion of one ingredient of the blood, albumen; though the albumen, when it exists in the urine, is in the state in which it is found in chyle rather than in blood. From a table given by Dr. Henry, it appears that ten pounds of diabetic urine, at the average specific gravity of 1,040, yields upwards of a pound and a quarter of solid extract.

The quantity of urine voided in this disease is sometimes enormous. In one case on record, it amounted to the prodigious quantity of 52 pounds in the 24 hours; but instances are by no means uncommon in which the quantity amounts to from 25 to 35 pounds every 24 hours for weeks or even months together. Although one of the most constant constitutional symptoms attendant on this disease is inordinate thirst, yet the urine daily voided almost always exceeds the quantity of liquids drank, and sometimes the whole of both solids and liquids; and even occasionally, as is stated, to have been nearly double the quantity of the whole injesta. Where can this quantity come from? Some physiologists think that the very solids of the body are melted down and carried off by the urine, whence, as they suppose, the progressive emaciation, notwithstanding the quantity of food and drink consumed; others with more reason suppose that the supply of fluid is obtained by the absorption of moisture from the air by the respiratory and cutaneous surfaces.

The diabetes commonly comes on slowly and almost imperceptibly, at least without any such disorder of the general health as to attract particular notice. It therefore sometimes exists a considerable time before it becomes known; and the change in the quality of the urine is at length discovered by accident; for its quantity may not at first be very much increased, or if increased to such a degree as to attract notice, the circumstance is usually attributed to some temporary cause. At length, however, the constitution manifestly suffers; the strength and vigour fail. the patient feels languid and indisposed to make any physical exertion, the mouth is dry, the tongue clammy; there is unusual thirst; a slight degree of fever is set up, indicated by alternate chills and heats; but the most remarkable circumstance is a change in the condition of the skin, which becomes dry, harsh, and sometimes even furfuraceous, or apt to peel off in scales. The thirst now increases to such a degree as to be evidently morbid; this is often, though not always, accompanied with voracious appetite; and the quantity of urine discharged not only decidedly but steadily increases. If the observation of these circumstances should lead to the examination of the urine, it is found to be sweet to the taste and of a light green or pale yellow colour. The patient meantime is commonly observed to have lost flesh, and is troubled with a sense of heat and pain in the region of the stomach, with aching in the back and loins, and uneasy sensations in the course of the urinary passages. The bowels are usually costive, the breathing short and oppressed, with a dry tickling cough, and the pulse is commonly frequent. As the disease advances, all these symptoms increase in intensity; the tongue becomes either loaded with a dark-coloured fur, or unnaturally clean and of a dark or purplish red colour; the thirst is more urgent; the appetite, formerly voracious, is now perhaps abolished or depraved; the bowels are more constipated; the skin more harsh and scaly; while the urine, increasing in quantity, becomes still more altered in quality. At length there come on headache, giddiness, occasional loss of vision, impaired memory, and diminished mental energy. The debility and emaciation steadily increasing, the patient sinks with many of the symptoms of hectic fever, or is suddenly cut off by consumption, dropsy, apoplexy, or some other incurable disease established in some vital organ.

From the preceding account it appears that this disease is generally of a chronic character; but it sometimes attacks in an acute form, the marked symptoms of the malady coming on suddenly in a previous state of apparent health, and proving fatal in a few days. This however is very rare. It seldom runs its course under some months, and it sometimes lasts several years. It frequently disappears for a while, especially under proper treatment, and then recurs after the lapse of a few months or years; so that the relief obtained is commonly only temporary, the disease resuming all its severity from a slight exposure to its exciting causes, or from any considerable deviation from the proper diet and regimen. Hence it is perhaps the prevalent opinion among physicians that it is absolutely incurable. Dr. Cullen says, 'In all the instances of this disease which I have myself seen, and in several others of which I have been informed, no cure of it has ever been made, though many instances of it have occurred, and in most of them the remedies recommended by authors have been diligently employed:' he adds, however, 'from the testimony of several authors, I believe the disease has been cured.' There cannot be a question that by appropriate remedies and great and persevering care on the part of the patient, it is capable of being very much relieved, and even of being altogether suspended for an indefinite number of years. The evidence of this is indubitable; but it is more doubtful whether it can be permanently and radically cured. Much of course will depend on the constitution and habits of the patient, and if any other disease be present, on the kind of malady with which it is complicated. It can never be considered as cured until the quality as well as the quantity of the urine is restored to a natural state.

How long the powers of life may be capable of sustaining such an abstraction of the nutritive fluid as is implied in the constant secretion of such an enormous quantity of urine as is commonly formed from the blood in this disease we do not know, because diabetes never consists in the disordered action of the kidney alone; it is seldom, perhaps never, the only serious disease present. The skin is invariably in a diseased state; the lungs are never perfectly sound; some of the most experienced and observant physicians state that they have never met with a case in which there has not been manifest a greater or less degree of disease of the lungs. All writers on the subject record its frequent complication with and termination in consumption; and it is rare indeed that the indications of disease in the digestive mucous surfaces and in the liver are absent.

An inspection of the organs after death which has been made with great care does not throw so much light on the seat and nature of diabetes as might have been expected. In several cases in which the symptoms were present in a very intense degree during life, no appearance of change of structure in the urinary organs could be detected after death. In general however the kidneys are larger than natural; more turgid with blood; more flaccid; softer, and more easily torn. Sometimes, though rarely, they are found in the contrary condition, smaller and harder than natural, and their membranous envelope and their cortical substance are of a cartilaginous firmness and density. Several observers have recorded the remarkable fact, that the organic nerves which supply the kidneys are greatly enlarged in size. The ureters are commonly dilated, and the urinary bladder is often thickened. It is obvious that these morbid states of the kidneys may be the effects of the disease, and not the causes of it. Next to the kidneys, the organs most commonly found in a state of disease are the mesenteric glands, which are enlarged and hardened. The absorbent glands in general are occasionally enlarged, softened, and more vascular than natural; the thoracic duct is sometimes dilated, and the lungs are constantly found studded with tubercles in all their stages of disease. Though the functions of the stomach, intestines, and liver are so often disordered during life, yet it is comparatively rare that any kind or degree of organic change is discoverable in these organs after death. There is reason to believe that during life the blood is in a morbid state, for when abstracted in the progress of the disease, the crassamentum is found loose, dark, containing a smaller portion of fibrin than natural, and the serum is of a whitish colour; and when examined after death, the blood is found to be more black and more fluid than natural, and to contain a quantity of chyle imperfectly mixed with it.

The true and invariable antecedents of diabetes, or its proper exciting causes, are still involved in obscurity. It has been observed to come on after exposure to several morbid agents, as the long-continued application of cold and moisture, especially after the body had been previously over-heated, implying a sudden check to the perspiration, and a corresponding determination of blood from the skin to the internal organs; exhaustion arising from excessive evacuations, or excessive fatigue, bodily or mental; in short, whatever greatly and suddenly depresses the powers of life: but such causes are applied in all their intensity to the human body many thousands of times for one in which they produce a case of diabetes. They can therefore only concur with some other cause to produce the malady. What that proximate cause is, is wholly unknown. It would seem however to be dependent on a constitutional, that is, an organic, conformation of some organ, or some system of organs; for there is decided evidence that it is an hereditary disease. In one instance on record, seven descendants of a diabetic patient died of the malady; and Dr. Prout states that he has observed it to descend from the parent to the offspring in four instances.

Whatever doubt may be raised about the perfect curability of diabetes, there can be none respecting the decided control which a judicious plan of treatment is capable of exerting over its progress. As the very seat of the disease is unknown, and much more the specific morbid action upon which it depends, it is obvious that no local remedy, applied with a view to produce any specific effect, can be employed with the least chance of success.

It has been stated that the nutritive fluid, the blood, is in a morbid condition, and the circulation itself is deranged. There are unequal determinations of blood to different parts of the system, in consequence of which some organs are deprived of their due proportion of nutrient matter, and others are oppressed by an overwhelming load of it. One of the most constant results of this change in the quality and distribution of the blood, is the excitement of fever, which, as has been stated, is among the very first of the signs by which the presence of this disease is denoted. General blood-letting is the most efficient remedy we possess in directly altering the constitution and the distribution of the blood, by altering the proportions of its constituent elements, and the degree of stimulus afforded to the heart and the capillary arteries. In the early or acute stage of the disease, when febrile symptoms are present, when there is perhaps severe pain in some organ, attended with a sense of heat, and when the pulse is frequent, full, and sharp, bleeding from the arm to the extent of subduing these symptoms and removing the febrile state, is a most efficient remedy, and highly conducive to the success of other remedies. The quality of the blood is found on examination greatly to improve under the judicious repetition and employment of this remedy, the proportion of fibrin increasing, and even the quantity of urea and of saline ingredients also increasing. Even in a more advanced stage of the disease, when the disordered circulation of the blood is rather local than general, when there is evidence of congestion or inflammation of the liver, and still more of the kidneys, cupping over the seat of the disease, and repeated according to the persistence of the symptoms, is both a safe and an effectual remedy. But when the pulse is rapid and weak, the emaciation considerable, and the powers of life decidedly impaired, blood-letting, either general or topical, can accomplish no rational indication, but must co-operate with the malady to hasten death.

There are few diseases in which the proper regulation of the diet is of such vital importance. As far as it is possible, by a collection and comparison of the morbid phenomena, to judge of the seat of the disease, it would seem to be principally in the digestive and assimilative organs. The stomach is at once irritable and weak. It is in a state of almost constant craving for food, yet its power of digestion is feeble. This is precisely the case in which it is of the last importance to attend strictly both to the quality and the quantity of the aliment. Vegetable matters, more especially sweet and acid vegetables, or those which contain in the greatest proportion the elements of sugar, might well be supposed *à priori* to be bad, and experience shows that they are in the highest degree deleterious. Cases are on record in which, when the patient was in a fair way of recovery, and even when the disease was altogether suspended, the partaking of such vegetables in moderate quantity at a single meal has brought back all the symptoms. Animal food should form the main portion of the diet. Books have been written to show that it should constitute the sole diet; but it never can constitute the sole diet, for mortal resolution cannot long persist in the exclusive use of it; and if it could, the practice would defeat its own object, and still farther weaken the already enfeebled digestive organs. Physiology has demonstrated that life cannot be sustained by one kind of food alone, however nutritious, and that nothing is more conducive to the easy performance of the process of digestion than a due mixture of different kinds of aliment. In the present case experience has fully shown that all the curative effect which can be obtained from what is called the animal regimen, is accomplished by making animal matter the principal part of the diet, and combining with this a small proportion of the farinaceous vegetables. Animal food need not be taken oftener than twice a day, and of all kinds of animal food, beef-steaks or mutton-chops underdone and plainly cooked are the best. The quantity is second in importance only to the quality. The meals should not be at greater distances than five or six hours apart, and any solid food taken oftener than every three hours, however it may for the moment allay painful sensations, operates unfavourably on the progress of the disease. The best drinks are distilled-water, lime-water, alum-whey, and the Bristol hot-well and Bath waters. The latter especially tend powerfully to assuage the thirst; but moderation in the use of liquids is as indispensable as in that of solids, and unless the patient resolutely co-operate with the physician in controlling his inordinate desire for food and drink, no plan of treatment that can be devised will succeed.

The bowels, which are generally costive, require to be kept in a lax state; and even a decidedly purgative course, steadily persevered in, has tended, on obvious principles, greatly to lessen the urinary discharge. The best purgatives are rhubarb combined with senna, and the phosphate of soda; and sulphur forms a very excellent laxative.

Next to the condition of the alimentary canal the state of the skin requires attention, which is often permanently improved, with a proportionate improvement in all the symptoms of the disease, by the persevering and judicious employment of the vapour bath, the hot-air bath, the sulphur bath, the vigorous use of the flesh-brush, and warm flannel clothing, always in immediate contact with the surface of the skin.

As a part of the regimen, regular daily vigorous exercise in pure air is of great importance.

In addition to all this, numerous medicines have been employed with a view of acting directly on the secretion of the urine, as astringents, tonics, and sedatives, some of which experience has shown to be possessed of very considerable power, more especially opium, camphor, ammonia, the carbonate of iron, the mineral acids, &c. The judicious selection and administration of these powerful agents, according to the peculiar circumstances of the individual case, in combination with the general plan of treatment which has been stated, will tend greatly to mitigate the urgent symptoms, and to increase the chance of a permanent cure.

DIACAUSTIC. [Refraction; Optics.]

DIA'COPE, a genus of fishes of the section Acanthopterygii, and family Percidæ, and belonging to that section of the family, in which the species have less than seven branchiostegous rays, and an interrupted lateral line.

This genus is allied to Serranus, but may be distinguished by there being a notch or emargination in the lower part of the preoperculum, into which is fitted a projecting tubercle.

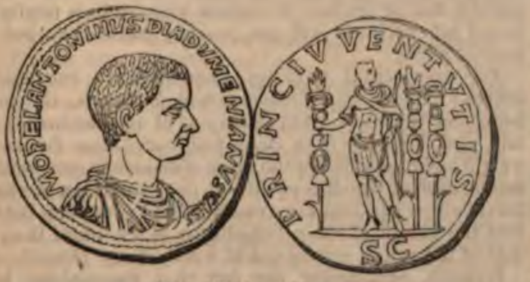
Many large and beautiful species of this genus inhabit the Indian seas. *Diacope octolineata*, a very beautiful species, caught off the coast of the Mauritius, is of a brilliant reddish yellow colour, shaded into white on the belly, and is adorned with four longitudinal blue stripes on each side of the body; these stripes are margined with black. It is about ten inches in length.

Some of the species are known to have attained the length of three feet and upwards.

DIADE'LPHIA, the seventeenth class in the Linnæan system of arranging plants. Strictly speaking, it ought to contain no genera but those which have their stamens united into two equal or unequal parcels; but as it consists principally of leguminous genera it is customary to place in it all the papilionaceous plants which have united stamens, whether in one parcel or two. This and similar plans render the Linnæan system more natural, but destroy its use as an artificial guide to the determination of the name of a plant.

DIADE'MA (Zoology). [CIRRIPEDA, vol. vii. p. 210.]

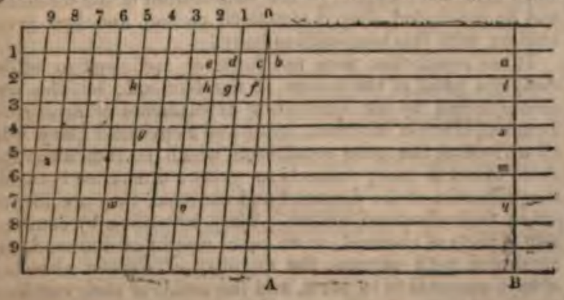
DIADUMENIA'NUS, MARCUS OPE'LIUS ANTONI'NUS, was the son of Macrinus, who was proclaimed emperor by the soldiers after the murder of Caracalla, A.D. 217. After his father's elevation, Diadumenianus, who was then at Antioch, was proclaimed Cæsar by the soldiers, and confirmed by the senate at Rome. He was not quite ten years of age, but is said to have been very handsome and graceful in his person. The reign of Macrinus lasted only fourteen months; a military insurrection, excited by Mæsa, the aunt of Caracalla, who wished to put on the throne her grandson Bassianus, also called Heliogabalus, led to the overthrow of Macrinus, who was defeated near Antioch, and afterwards made prisoner, but killed himself. Diadumenianus, who had escaped from Antioch, was also seized and put to death, A.D. 218. He has been numbered among the emperors, because his father in the latter days of his reign is said to have proclaimed him Augustus and his colleague in the empire. (Lampridius in *Historia Augusta;* Dion, *Epitome*, B. 78.)


M OPEL ANTONINUS DIADUMENIANUS CAES
PRINC IVVENTVTIS
SC

Coin of Diadumenianus.
British Museum. Actual Size. Copper. Weight 345½ grains

DIAGONAL, a line drawn from corner to corner any line drawn from point to point of a figure, which is not part of its boundary, provided the two extreme points be in the intersection of boundary lines.

DIAGONAL SCALE. Equidistant parallel lines cut *all* lines drawn across them into equal parts. Consequently a set of equidistant parallels laid down upon a ruler, with oblique lines of various lengths drawn across them, give with the compasses, the means of immediately taking off various proportions of those lines. But the common diagonal scale is as follows, and facilitates the laying down of



the hundredths of units in a scale of equal parts. A description of its use will immediately suggest the principle of it to any one slightly acquainted with geometry. AB is the unit of the scale (usually a quarter of an inch): the diagonal scale professes to determine the hundredth part of this, or the four-hundreth of an inch, and may perhaps, with care, be depended on within the two-hundredth of an inch. By taking off various lines, and writing their numerical designations opposite, we may show the use and meaning of the construction.

$$\begin{array}{llll} ab = 1{\cdot}00 & ae = 1{\cdot}21 & lh = 1{\cdot}22 & mz = 1{\cdot}96 \\ ac = 1{\cdot}01 & lf = 1{\cdot}02 & lk = 1{\cdot}52 & qv = 1{\cdot}37 \\ ad = 1{\cdot}11 & lg = 1{\cdot}12 & xy = 1{\cdot}54 & qw = 1{\cdot}67 \end{array}$$

DIA'GORAS OF MELOS, known also by the name of the Atheist, flourished, according to Suidasin, the 78th Olympiad, 468—5 B.C. Mr. Clinton has adopted this date; but Scaliger (in Euseb. Chron. p. 101) placed him considerably later, fixing his flight from Athens in the year 415 B.C.; and he has been generally followed. The date which Mr. Clinton has taken is the more probable. The precise determination however of the time of Diagoras is not of much importance, as he is only known for his open denial of the existence of gods, and he cannot be said to have any part in the history of Greek philosophy.

Diagoras is said to have broached atheism on seeing a man who had stolen one of his writings and published it as his own go unpunished for the crime. (Sext. Empir. *adv Math.* p. 318.) On account of this atheism it is generally said that the Athenians put a price upon his head, offering one talent to any one who should kill him, and two to any one who should bring him alive; though Suidas, Athenagoras and Tatian attribute the indignation of the Athenians, and the consequent flight of Diagoras, to his having divulged the nature of some of their mysteries. It is not impossible however that this should have been one of the overt acts by which his character for atheism was established; in which case the two accounts, which seem to differ, would really coincide. He is said to have been bought as a slave by Democritus, and also to have met his death by shipwreck. (Athen. xiii. p. 611, B.) Aristophanes in his play of the Clouds, one object of which was to raise a religious outcry against Socrates, has maliciously fastened on him the odious name of the Melian. (*Clouds*, 830.)

Ælian (*Var. Hist.* ii. 23) says that Diagoras assisted Nicodorus in drawing up the laws of the Mantineans. Diagoras was also a lyric poet, though some, apparently without sufficient grounds, have attempted to separate the lyric poet from the atheist. (Bayle's *Dictionary;* Fabricii, *Bibliotheca Græca*, ed. Harles, vol. ii. pp. 119 and 655.)

DIAGRAM, a mathematical figure of any kind.

DIAL, an instrument for determining the hour of the day from the shadow of a point or line upon a graduated surface. The shadow may be that formed by the light of the sun or moon, and either direct or reflected. The dial, when the sun is used, is called a sun-dial; and when the moon, a moon-dial. The latter kind, as well as those in which the light is reflected, are mere objects of scientific curiosity, and no further notice will be given of them in this work; but the history and structure of the sun-dial will be found under GNOMON, HOUR-LINE, and SUN-DIAL

DIALECT (*διάλεκτος, δια-λέγ-εσθαι, to converse*), an appellation given to a language when spoken of in contradistinction to some other language which it resembles in its general features, though differing from it more or less in the details. Almost all the languages which we are acquainted with may be arranged in distinct classes or families, and the relationship subsisting between the members is, generally speaking, pretty obvious. Sometimes the parent language from which they are all descended is still extant, and in that case it is frequently easy to trace the variations in orthography, inflexion, and conjugation from the parent stock, and to determine the principles which governed these changes. These inquiries, whenever they can be successfully prosecuted, are of the greatest importance, as well to the critical historian as to the philologer; for the language of a people points at once to their mental characteristics and the external changes to which they have from time to time been exposed. Thus the Dorian dialect of the Greek language, in the broadness and harshness of its vowel sounds, corresponds to the grave and austere character of the Dorian people: and whenever a warlike race has taken up its abode among a peaceful agricultural population, traces of this mixture of population are always found in the language, in which the military and political terms are mostly peculiar to the language of the conquerors, while, for the words referring to farming and domestic economy, the aboriginal language is retained. This is strikingly the case in the Latin and English languages. The two most widely diffused families of languages known to us are the Indian-Gothic and the Semitic; the former includes the Sanscrit, Zend, Armenian, Greek, Latin, Lithuanian, Sclavonian, Teutonic, and Celtic dialects, in which the resemblances, though sometimes rather distant, are still more or less perceptible. The Semitic family contains the Hebrew, Syriac, and Arabic tongues, with others less known to modern Orientalists. Many of these primary dialects are divided into several sub-dialects; for instance, the ancient Greek had at least three distinct dialects, the Æolian, Dorian, and Ionian.

The differences in the modes of speaking in England can hardly be called dialectical, in the sense in which the word dialect has been explained: such differences, generally speaking, are nothing more than peculiar words or phrases which the written language has not adopted, but which are not the less on that account genuine members of that Teutonic family of which the written language itself is only a part.

But so far as any of these varieties have been committed to writing, and are admitted by a large portion of the population to be a faithful representation of the language in daily use among them, so far such varieties may not inaptly be called dialects. Such are many of the poems of Burns and parts of the novels of Scott. In ordinary conversation in England, the words 'provincialism' and 'dialect' are often used as synonymous, and as expressing some usage of language which is at variance with the established language of the educated and that of the best writers. It is however only a vulgar mistake to consider such words as 'corruptions' of language, which they very rarely are. As a general rule, such words and phrases and such peculiar pronunciations as characterise nearly every county of England, are of the genuine Teutonic stock; and that language which is now the established language of literature, and which has rejected some of the so-called provincialisms and adopted others, might, under different political circumstances, have contained these elements in a different proportion. If the metropolis of England had been on the Severn, the Humber, or the Tyne, who can say how much the written language might have been affected by this circumstance?

DIALECTICS (διαλεκτικὴ τέχνη), the old name for the practical part of logic. The word properly signifies 'the art of conversation,' and its use as a name for the art of reasoning seems to have arisen from the fact, that Zeno the Eleatic, who was the first compiler of a system of logic, was also the first writer of dialogues. It is also to be remembered, that formal argumentation among the Greeks was generally carried on by means of question and answer, and Aristophanes uses the more common word *dialexis* (διάλεξις), to signify the logic of the Sophists. There were several systems of logic between Zeno and Plato, as, for instance, those of Protagoras, Polus, Gorgias, Euclid, and Eubulides. Socrates never committed any thing to writing; but if we take the representations given of his mode of reasoning by Plato and Xenophon, so far as they agree, we must look upon him as in some measure the originator of Plato's scientific method of arguing. (See Schleiermacher on the Worth of Socrates as a Philosopher, in the Transact. of the Berlin Acad. for 1815, transl. in the Philolog. Mus. vol. ii.) Plato considered dialectics as the science of definitions (*Sophist.* 253), and as every definition must include both genus and difference, he found it necessary to invent a theory of abstract ideas as the basis of his dialectics; for the ideas (ἰδέαι) and the genera (εἴδη) were, he considered, related merely as subject and object; and he thought that, without assuming the objective existence of the genera, he could have no real general ideas, and so his definition, and consequently his whole dialectical system, which he believed to be the only available means of finding out the truth, would fall to the ground. (Van Heusde, *Initia Philosoph. Platon.*; Cousin, *Fragmens.*) Aristotle's dialectics were based upon a scale of categories or predications, much the same with those of Archytas; he did not think it necessary to assume any *a priori* abstract notions, but conceived it was sufficient for all logical purposes to generalize after experience. (Facciolati's *Logica Peripatetica.*) The dialectics of the Stoics appear to have been little more than a system of grammatical rules. For the application of dialectics the reader is referred to the article LOGIC; and for the outlines of modern dialectical systems the articles FICHTE, HEGEL, KANT, LEIBNITZ, SCHELLING, and SCHLEGEL may be consulted.

DIALLAGE. [SCHILLER SPAR.]

DIAMETER, a word most commonly applied to the line drawn through the centre of a circle, and bounded on both sides by the circumference. But the most general meaning is as follows. Whenever any point is called a centre (meaning centre of figure, see CENTRE), any line drawn through the centre is called a diameter. And any point which bisects all lines drawn through it from opposite boundaries is called a centre. Thus the circle, the conic sections, the parallelogram, the sphere, cube, and parallelopiped, all have *centres*, and, by analogy, *diameters*.

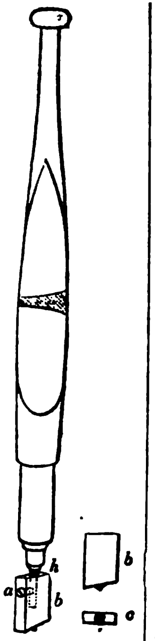
DIAMOND, a crystalline gem, which, on account of its high lustre and extreme hardness, has always been regarded as the most valuable of the precious stones; the former of these qualities arises from its great refractive power, and on account of its hardness its lustre remains undiminished. The diamond usually occurs in imbedded octahedral crystals in alluvial ground, in the East Indies and Brazil, and of late years, it is said, has also been found in the Ural mountains. It is commonly colourless or greyish, but sometimes green, yellow, red, brown, blue, and black; the two last-mentioned colours are the rarest. Its lustre is adamantine; refraction single; transparent, but sometimes rendered opaque by foreign matter; hardness 10, exceeding that of any other, and scratching every other substance; owing to its hardness it can be cut, or rather worn down, only by rubbing one diamond against another, and it is polished by the friction of portions of the gem itself reduced to powder, it is broken without difficulty. The specific gravity of the diamond is 3·52; streak greyish; fracture conchoidal; cleavage parallel to the planes of the regular octahedron, which is its primary form, subject however to numerous varieties, and the faces are frequently curvilinear. When rubbed it phosphorises, and becomes positively electrical, and is therefore a non-conductor of electricity. When heated, without the contact of air, it suffers no change, but if ignited in contact with it, it is totally converted into carbonic acid gas, proving that it is carbon in a state of purity.

For ornamental purposes diamonds are cut into two shapes: namely, *rose diamonds* and *brilliants*, the former being, for the most part, made out of the octahedral crystals, and the latter from those with curvilinear faces. The weight and consequently the value of diamonds is estimated in carats, each of which is equal to 3.166 grains. In the formation of either a brilliant or a rose diamond so much is cut away that the weight of the polished gem is not more than half that of the rough crystal out of which it was formed.

Newton, considering the fact that transparent bodies which are uninflammable refract light nearly in the ratio of their density, while those which are inflammable have refractive powers that are greater than their density, was led to conclude that the diamond, on account of this great refractive power, was 'probably an unctuous substance coagulated.'

In 1695 experiments were made at Florence, which proved the diamond to be dissipated by intense heat in the focus of a burning lens. Several chemists proved that diamonds lost no weight when heated without the contact of air, and on the contrary, that they were dissipated when heated in it; but it was first shown by Lavoisier that carbonic acid was obtained by the combustion of the diamond, and he concluded that it contained carbon, and had great analogy with this combustible body.

These researches were not however sufficient to afford complete proof of the nature of the diamond; but this was accomplished by the succeeding experiments of Smithson, Tennant, Guyton Morveau, Allen and Pepys, and Davy, who all arrived at the same conclusion, which is, that although there exists in many respects so great a difference between the properties of the diamond and charcoal, they are identical in their chemical nature. Thus, whenever, by combustion, 6 parts of charcoal, or an equal weight of diamond, are combined with oxygen, the quantity of oxygen absorbed always amounts to 16 parts, and the result of their combustion is 22 parts of carbonic acid.



DIAMOND. The pencil diamond used by glaziers to cut glass with is a small fractured piece of diamond. The part of the diamond used for cutting is of a trapezoidal shape, weighing about the 60th part of a carat, and is set in a wooden handle, which consists of a rounded piece of rose-wood flattened at the two sides to fit between the sides of the fore and middle fingers.

Two pencil diamonds are now in use, the old and the new or patent pencil. The old diamond is merely set fast in a conical shoulder. A difficulty is always experienced in cutting glass with this sort of pencil, owing to the uncertainty of placing it at once at the proper angle with the glass, so as to make it cut and not scratch. The patent diamond, of recent invention, overcomes this difficulty. The form is represented in the annexed figure. The peculiarity consists in the diamond being set in a parallelopiped shoulder, *b*, *b*, the right angle of the lower end of which is cut off and forms the correct angle at which the diamond when set will cut the glass. The upper end of the shoulder swivels at *h*, but is stopped from going too far by the screw *a*. The object of this is to prevent the necessity of shifting the handle in the hand when placed against the ruler laid on the glass. The lower end of the shoulder, showing the diamond, is represented at *c*. A large diamond is not so fit for the purpose of cutting glass as a small one. The diamond is usually about the size of an ordinary pin's head, and is set in a nipple of brass or copper. It is an error to suppose that diamonds will not wear out. In the shops of wholesale glaziers, where the diamond is in constant requisition, one of these instruments is worn down in a month or six weeks, so as to require resetting, after which, with the same wear, it usually lasts another month, and then becomes useless. It may be presumed that they travel over some miles of glass before they are worn out. In cutting the glass, care is taken not to press too heavily on the diamond, which is apt to scratch instead of cutting the glass; such heavy pressure also spoils the diamond.

The price of these useful instruments is, for a common pencil 12*s.* and for a patent pencil 18*s.*

DIAMOND HARBOUR, in the river Hoogly, about 35 miles in a direct line below Calcutta, is the place at which the large ships employed by the East India Company were accustomed to discharge their outward, and take on board the greater part of their homeward, cargoes, their loading being completed in Saugor Roads. Large warehouses for containing ships' stores have been built here, and an excellent raised road, or causeway, constructed between Diamond Harbour and Calcutta, passes through rice-fields in a state of high cultivation. The station is found to be very unhealthy, especially between July and September, owing, it is supposed, to the great quantity of vegetable matter brought down by the floods and allowed to stagnate upon the low swampy shore.

DIA'NA, a goddess who was worshipped in antient Rome and Italy. It has been already stated [Bellona] that the only safe authority for defining the attributes of the Roman deities is the etymological origin of the names; and in the same place it was pointed out that each element of nature supplied the Romans with two deities, a male and a female. Thus Dianus and Diana are properly two adjectives, derived from *dies*, ‘day,’ or, perhaps, originally ‘light,’ precisely as *quotidianus* from *quotidie*, and in this way they were the appropriate names of the god and goddess of light, the former representing the sun, or greater light, the latter the moon. Dianus, by an easy change, would become Janus, as Diana, we know, was corrupted by the rustic population into Jana in their hymns to the new moon, beginning *Jana novella*.

As the huntsman of Italy preferred the night for his sport—

> Manet sub jove frigido
> Venator, teneræ conjugis immemor—

Diana, or the moon, naturally became the patroness of the chase, and so of the wood. Again, in her character as goddess of light, her aid was invoked in parturition. In this latter office she was also called Lucina, a term of precisely the same import from *luc*, ‘light;’ and the identity of the two goddesses is established by the contracted form Luna, which, like Diana, is the name of the moon.

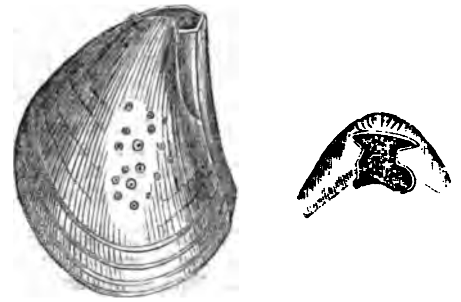
Diana had a temple on Mount Aventine, and another near Aricia. Indeed her worship belonged strictly to Latium and the plebeians of Rome. [Artemis.]

DIANÆA. [Medusa.]

DIA'NCHORA, a genus of fossil conchifers, established by Mr. Sowerby in his ‘Mineral Conchology.’

Generic Character.—Shell delicate, adherent, regular, symmetrical, equilateral, subauriculated, inequivalve; one valve hollowed within, convex without; the other flat. Hinge consisting of two distant condyles.

Cuvier (Règne Animal) places the genus between *Pachytes* and *Podopsis*, M. De Blainville between *Plagiostoma* and *Podopsis*, and M. Rang between *Pecten* and *Pedum*. M. Deshayes, in his edition of Lamarck, after observing that *Pachytes* had been formed at the expense of *Plagiostoma*, states that his examination of the species had satisfied him of the identity of the genera, and that the same examination instituted with regard to *Dianchora* had convinced him that the characters of the last-named genus were identical with those of *Pachytes* and *Podopsis*. A further inquiry terminated in the conclusion that the so-called genera, *Podopsis*, *Dianchora*, and *Pachytes*, were only *Spondyli*, whose internal lamina had been dissolved, and had left naked the external or conical lamina. [Spondylus.] The subjoined cut will convey to the reader the form of one of the so-called species.



[Dianchora striata.]

DIA'NDRIA, the second class in the Linnæan system of arranging plants. It comprehends all genera with flowers having only two stamens, provided the stamens are neither united at their base, nor combined with the style and stigma, nor separated from the pistil.

DIANTHUS, a beautiful genus of Silenaceous Dicotyledonous plants, with a calyx closely covered at the base by two, three, or four, opposite pairs of decussating rigid sharp-pointed bracts. The petals are always more or less lacerated at the end, and in some species are divided into fine capillary segments. There are ten stamens, two styles, and the capsule is one-celled, with numerous black seeds containing a straight embryo. In all cases the leaves are long, narrow, one-ribbed, sharp pointed, and destitute of all lateral reticulated veining.

De Candolle enumerates 113 species, of which some must undoubtedly be reduced to simple varieties. They are found in all the temperate parts of Europe and Asia, from Ireland to the eastern coast of China and Japan; two have been met with in the United States of America, and four at the Cape of Good Hope. Most of them are perennial herbaceous plants with permanent leaves and stems, and hence they ought perhaps to be considered under-shrubs; a few become woody and form genuine bushes.

The most remarkable species are *D. barbatus*, or the Sweet William, a common and very beautiful hardy herbaceous plant, native of the south of Europe; *D. Caryophyllus*, or the Clove Pink, so called from its spicy fragrance; in its wild state a native of France and England, in its cultivated state the parent of the Carnation, Picotee, and Pink of the florists [Carnation], and *D. Libanotis*, the Syrian Pink, with the most lovely feathered petals; there are however few genera in which the species are so generally deserving of the gardener's care, for we do not know one that is otherwise than beautiful. The species are however seldom seen, in consequence of a difficulty in preserving them in a healthy state in the damp climate of Great Britain.

Although some of the species are indigenous to Great Britain, by far the greatest number are natives of the southern parts of Europe; abounding in Germany, Switzerland, Italy, and along the shores of the Mediterranean, Black and Caspian Seas, inhabiting rocks, mountains, and dry warm stony places most frequently, although occasionally living in sandy and damper places. Of our own wild kinds, *D. Caryophyllus* only occurs upon old crumbling walls, such as those which surround the city of Norwich, others in dry gravelly places or on limestone rocks.

It is therefore obvious that the gardener must pay special attention to this peculiarity, and guard by every means in his power against the access of wet, unless when the plants are in a state of free growth. In the winter, when they are at rest, they bear moisture very impatiently. It is therefore either upon rockwork or in pots housed in winter that the species of Dianthus are best preserved: we remember indeed to have seen a plant, either *D. deltoideus* or an allied species, growing by a single stem from a cleft in a hard wall near Bristol, where it had been established many years. The soil in which they are planted should consist of equal quantities of good fresh loam and vegetable mould, to which may be added a little horse dung and sand, the whole to be mixed well, and allowed to remain for a season before being used.

All the species may be propagated either by seeds or by the same processes that are employed for the Carnation and Picotee, namely, by layering or piping. Layering is decidedly the surest method, as the young shoot derives support from the parent plant until it has protruded rootlets of its own for nourishment. In this operation, gardeners generally practise a method technically called tongueing which is simply making a slit with a knife, from a little below the joint, up through its centre, and then carefully pegging the young shoot down as in the common way. Pipings are a sort of cuttings, and will root freely in a melon or cucumber frame, which can often conveniently be applied to this purpose in the end of the season; but as artificial heat is not essential to success, those who have not this convenience may succeed very well with a small hand-glass.

If the pipings are not in a shaded situation, it is necessary to shade them when the sun's rays are powerful; because the rootlets are for some time insufficient to supply the stem with fluid enough to counteract the effects of evaporation. It is the want of due attention to this which causes the result of propagating the Dianthus by pipings to be considered uncertain: if shade and moisture are supplied for a sufficiently long time, there is little risk of the pipings not forming young plants.

DIAPA'SON, in music (διὰ, *through, and* πασῶν, *of all*), the interval of the octave, so called because it includes all admitted musical sounds. It likewise signifies the compass of any voice or instrument; and the French employ it to express what in England is meant by the term *Concert-Pitch*. [Concert-Pitch.]

DIAPASON STOP, in an organ. [Organ.]

DIAPENSIA'CEÆ, a very small natural order of monopetalous Exogenous plants, formerly mixed with Convolvulaceæ, but in reality more nearly allied to Polemoniaceæ. Only two genera are known; they consist of small depressed half-shrubby species, with the habit of a minute-leaved Phlox. Their calyx grows in a broken whorl; the corolla has an imbricated æstivation with five lobes, and as many stamens growing from its margin in the sinuses; the anthers have a broad connective, and burst transversely. The ovary is three-celled, with a good many ovules growing upon central placentæ. Finally, the embryo lies across the hilum, in the midst of fleshy albumen. No use has hitherto been made of these plants. (See Lindley's *Natural System of Botany*, p. 233.)

DIAPENTE, in Greek music, the interval of the Fifth.

DIAPHANOUS. [Transparent.]

DIAPHORETICS, or **SUDORIFICS**, are agents which increase the natural exhalation of the skin, or restore it when suppressed. Nothing better exemplifies the doctrine that remedies are only relative agents than this class of medicines, as their power to produce perspirations depends invariably upon the state of the patient and the circumstances in which he is placed, such as the temperature and humidity of the air by which he is surrounded. Many medicines which cause a flow of perspiration when the patient is kept warm, will produce, when he is in a cool temperature, an increased action of the kidneys and an augmented secretion of urine.

Their effects as diaphoretics are attempted to be accounted for by reference to two principles; 1, by increasing the action of the cutaneous vessels; 2, by increasing the vascular action of the whole system. Those diaphoretic remedies which seem to act according to the first principle produce their effects either by external application, such as the stimulus of heat, especially as proved by the hot-air bath, or as medicinal substances which enter the circulation and stimulate the cutaneous vessels by contact, such as mercurial preparations, some saline diaphoretics, and, most markedly, sulphur, which is evidently carried undecomposed to the cutaneous vessels and excreted by them; or, lastly, by acting on the surface sympathetically through the medium of the stomach, such as warm drinks, antimonial preparations, &c.

Those diaphoretic agents which seem to act according to the second principle are:—violent muscular exercise, carbonate of ammonia, guiacum, alcoholic stimulants, &c.

Diaphoretics are in general used to restore the cutaneous discharge when, from the action of cold or wet upon the system, it has been suppressed, and accordingly they are useful in common catarrh, rheumatism, or diarrhœa proceeding from cold. They are likewise of great service in fevers, the restoration of the secretion of the skin, if it be warm and gentle, not cold and clammy, often proving critical, and the precursor of recovery. In many cutaneous diseases diaphoretics are valuable agents, and for this purpose baths, either the natural warm baths or vapour baths, are used; but in such diseases the perspiration produced by exercise, or during a course of training, is decidedly the best diaphoretic. Some forms of indigestion are relieved or cured by causing an increased action of the skin, to effect which exercise is likewise the best agent.

It is worthy of remark, that the profuse and wasting perspirations which accompany the hectic of consumption are frequently more effectually checked by diaphoretics, especially the compound ipecacuan powder, than by any other means. (Young *on Consumption*.)

DIAPHRAGM (διάφραγμα), *septum transversum, transverse partition, midriff*, a circular muscle, placed between the thorax and abdomen, forming a movable partition between these two great cavities. Its borders, which are broad and fleshy, are movable; its central portion, which is tendinous, is fixed and immovable. When not in action, its upper surface, or that towards the thorax, is convex, presents the appearance of an arch, which reaches as high as the fourth rib, and is covered by the pleura, the membrane which lines the cavity of the thorax. Its under surface, or that towards the abdomen, is concave, and is covered by the peritoneum, the membrane which lines the cavity of the abdomen. It is perforated by several apertures, through which important organs pass from the thorax into the abdomen, and from the abdomen into the thorax. In its tendinous portion, between what is called its crura or legs, there is an oval aperture through which the aorta, or great artery of the trunk, passes from the thorax into the abdomen, and the thoracic duct enters from the abdomen into the thorax. A little above this and to the left of it, in the fleshy portion of the diaphragm, is an aperture through which the œsophagus passes in its course from the mouth to the stomach. On the right side of the diaphragm, in its tendinous portion, is a third aperture, through which the inferior vena cava passes from the abdomen to the heart.

The diaphragm is a muscle of extreme complexity in its structure, and, next to the heart, performs the most important function of any muscle in the body. Its most important office is connected with the function of respiration, and it is the principal agent both in enlarging the cavity of the thorax in inspiration, and in diminishing it in expiration. These actions it performs by virtue of the power of alternate contraction and relaxation which it possesses in common with all muscles. When in the state of relaxation, as in expiration, its broad, lateral, movable borders present an expanded arch, the convexity of which reaches, as has been stated, as high as the fourth rib; when in action, as in the state of inspiration, the fibres composing the lateral borders contract, whence this movable partition descends, until, from the form of an arch, it presents a plane surface, increasing the capacity of the thorax by all the space that intervenes between the fourth rib and the lowest point to which the diaphragm is capable of descending. The fibres then relaxing, the movable borders are pushed up by the contraction of the powerful muscles of the abdomen, until the diaphragm again assumes the form of an arch, diminishing the capacity of the thorax by all the space that intervenes between the lowest point to which it descends and the fourth rib. These alternate actions, which are performed in regular and uninterrupted succession, day and night, during our sleeping and our waking hours, from the moment of birth to that of death, constitute the principal portion of the mechanical part of the function of respiration or breathing, by which air and blood flow to and from the lungs. During these actions the central portion of the diaphragm, on which the heart rests, and to which the pericardium is attached, never moves; so that though the diaphragm is in constant motion, it never disturbs the action of the heart, which it assists in supporting, and the function of the circulation is not disordered by the movements which are indispensable to the function of respiration.

There is a fixed relation between the action of the diaphragm and of the abdominal muscles. When the diaphragm contracts, the abdominal muscles relax; when the abdominal muscles relax, the diaphragm contracts. The diaphragm is the antagonist of the abdominal muscles in inspiration; but it acts in concert with them in vomiting, in the discharge of the contents of the bowels and of the urinary bladder, and in assisting the expulsion of the fœtus in parturition. To produce the respiratory movements, and to assist in the expulsion of the fæces, the urine, and the fœtus, may be considered the natural and regular offices of the diaphragm; but it conduces to the performance of many other actions. It is the principal agent in vomiting, yawning, coughing, laughing, crying, and in hiccup, which may be regarded as its more powerful and irregular actions.

DIARBEKR, more properly **DEY-A'R-BEKR** (the tents or dwellings of Bekr), a town in Al-jezírah (the peninsula), is situated about 38° N. lat. and 40° E. long. It stands at a short distance from the right bank of the Tigris, the intervening space being occupied by gardens. The area of the town is considerable; the walls are lofty and substantial, and surmounted by a castellated parapet. Formerly the town was inhabited by 40,000 families, had extensive manufactures, especially of cotton goods, and carried on a very active commerce with India, through Bagdad, and with Europe through Aleppo. But the fertile plain, 150 miles in length, on which it stands, has in later times been laid waste by the invasion of the Kurds; the commerce with Bagdad is annihilated, and that with Aleppo reduced to insignificance. Still it contains about 8000 families (1500 are Armenian, 85 Catholic, 70 Greek, 50 Jews, and 6300 Turkish), and some manufactures of cotton, silk, and leather, especially morocco. It is the seat of a Jacobite patriarch and a Nestorian archbishop. The Tigris cannot be used as a means of transport so high up as Diarbekr; but rafts of timber are sometimes floated down from the mountains above the town. It is conjectured that the antient town of Constantia stood on the site, or in the neighbourhood, of Diarbekr. (Brant, in *London Geogr. Journal*, vol. vi.)

DIARRHŒA (διάῤῥοια), flux, looseness, purging, the frequent discharge from the bowels of more liquid stools than natural. The most obvious and common cause of this disease is the direct application of some stimulating substance to the inner or mucous surface of some portion of the alimentary canal; as articles of food and drink of too stimulating a quality, or, though wholesome in kind, taken in too large a quantity. Undressed or indigestible vegetables, whether acid or sweet, cucumbers, melons, mushrooms, different kinds of salads, fruits, especially plums, stale and decayed vegetables, animal food approaching to the putrescent state, as stale fish, high game, &c., contain matters either not easily digested, or when digested of so stimulating a quality as to irritate the mucous surface of the intestine, and to produce diarrhœa. Water tainted with putrid vegetable or animal matters, or loaded with certain kinds of living or dead animalcules, is no uncommon cause of diarrhœa. When a great mixture of different kinds of food and drink, in large quantities, though wholesome in kind, is taken into the stomach at one meal, it often produces a sudden attack of diarrhœa. Even a draught of cold water, beer, or milk, especially if the individual be overheated at the time, will often almost immediately occasion the same result. Many medicines and poisons are substances which prove directly and powerfully irritating to the stomach and intestines. The large class of purgative medicines and the poisons called irritants are of this kind. Purgative medicines, given in a certain quantity and at certain intervals ascertained by experience, produce a certain degree of diarrhœa, which the physician purposely excites for the accomplishment of various objects. Given in very large doses, or in ordinary doses when the system is in a state of peculiar irritability, they sometimes occasion an excessive diarrhœa, which continues longer than usual, and so produce that species of diarrhœa which is called hypercatharsis.

In the state of health various fluids are poured into the stomach and alimentary canal for the purpose of dissolving the aliment and assisting in its assimilation. To accomplish the purpose for which they are secreted from the common mass of blood, these fluids must be in certain quantity, and must possess a certain degree of stimulating power. But in various states of the system, from being bland in their sensible properties, and only moderately stimulating in their physiological action, they become greatly increased in quantity, and highly irritating in quality. Of these fluids the principal are the gastric, the intestinal, the pancreatic, and the biliary. The secretion of the gastric juice may be altered in quantity and quality, in consequence of which it may be incapable of properly dissolving the aliment, which therefore may be sent from the stomach into the intestines in an acrid and irritating state, and so produce diarrhœa. The pancreatic juice may also be altered in quantity and quality, and become highly irritating; and the bile is sometimes poured out in greater quantity than usual, and of a more than ordinary acrid quality, and in both ways is a frequent cause of diarrhœa. Moreover, the entire surface of the stomach and intestines is crowded with secreting organs, mucous follicles, from which a quantity of fluid is constantly poured out, constituting the chief portion of the evacuations passed when little or no food has been taken, and which probably also affords the principal part of the matter of the liquid stools that occur in diarrhœa. In many states of the system, and from numerous irritating substances applied to their surfaces, the secretion of these bodies becomes excessive in degree, and highly acrid and irritating in its nature.

The quantity of matter from this source may be indefinitely increased by whatever is capable of occasioning a greater efflux of blood than natural to the mucous surface of the alimentary canal. Hence it may be superinduced by all the other causes of diarrhœa—indigestible food, wholesome food in too large a quantity, disordered states of the digestive fluids, &c., and from increased afflux of fluids from other parts of the system, as from cold applied to the surface of the body and suppressing perspiration, which may determine a greater quantity of fluids to the intestines. Great alternations of temperature will, in many constitutions, produce the same result. Suppressed evacuations, checked menstruation, the retrocession of eruptive diseases, as measles, scarlatina, &c., are often immediately followed by diarrhœa. Even mental emotion is capable of producing it in some irritable and nervous constitutions to a great degree; and when under the influence of such emotions, the slightest excess in food or drink, or the slightest quantity of irritating aliment, will be succeeded by numerous and liquid stools. Irritation in a distant part of the body often induces increased action of the intestines and occasions diarrhœa, as the irritation of the gum in dentition. The mucous surface of the whole alimentary canal is highly sensitive and irritable in infants and children, and food improper in quantity or quality is exceedingly apt to induce diarrhœa in them, and if the irritation in the stomach and intestines from this cause be kept up long, irreparable and fatal disease is sure to be induced. Slight errors in diet on the part of the mother, and even an irritable state of mind, will disorder her milk to such a degree as to produce distressing diarrhœa in her infant. The excitability of the capillary arteries, the mobility of the muscular fibres, and the sensibility of the whole nervous system during the early periods of life, render the young much more susceptible to all the causes of diarrhœa than the adolescent and the adult; and the more tender the age the greater this susceptibility.

By whatever cause diarrhœa may be excited, it is seldom that the increased discharge of liquid stools from the intestines is the only symptom present. It is commonly preceded by nausea, and in general more or less uneasiness is felt in the stomach and intestines, which sometimes amounts to severe griping pain, often accompanied with flatulence. In severe cases, the abdomen is distended, and even tender to the touch; the nausea passes into vomiting, and the pain, especially around the navel or in the course of the colon, becomes intense, somewhat relieved, perhaps, after each evacuation, but soon returning with undiminished severity. The number of evacuations may vary from three or four to twenty or thirty in the twenty-four hours. Of course the sudden loss of so large a portion of the more fluid part of the blood as is contained in these watery evacuations, deprives the system of a proportionate quantity of stimulating and nutritive matter, and accordingly there is often great prostration of strength, and a striking expression in the countenance and attitude of languor and debility. In slight cases, the pulse is little if at all affected; but when the pain is severe and the discharges copious, the pulse is quickened, and at an advanced stage of the attack is generally small, weak, and much increased in frequency. The tongue is loaded, and in certain forms of the disease is intensely red at the edges and tip, and the papillæ are large, prominent, and of a bright red colour, shining through a thick coat of fur. The urine is generally diminished in quantity. The skin, at first hot, towards the termination of the attack is unusually cold and chilly, and is peculiarly incapable of resisting the influence of a cold and damp atmosphere. Every observant physician must be able to recal instances which have occurred in his practice, in which inflammation of some vital organ was set up, or perhaps the foundation of consumption laid, from the patient having imprudently gone out on a cold and wet day after having taken purgative medicine, or when labouring under diarrhœa spontaneously induced.

The nature of the matters contained in the evacuations varies remarkably, and affords important indications of the seat and state of the disease. Several varieties of the disease have indeed been founded on those appearances, and diarrhœa has accordingly been divided into fœculent, bilious, mucous, serous, chylous, lienteric, &c., but the causes of the disease afford more fixed and determinate characters for its distribution into species. Of these there are commonly enumerated the following:—diarrhœa *crapulosa*, from food improper in quality or quantity; diarrhœa *biliosa*, from bile more abundant or more acrid than natural, as from the heat of summer and autumn, co-operating with errors in diet; diarrhœa *serosa*, from increased vascular action of the mucous surface of the alimentary canal, induced by whatever occasions a preternatural afflux of blood to the mucous surface; diarrhœa *mucosa*, from increased secretion of the mucous follicles, which may be induced by almost any of the ordinary exciting causes of diarrhœa; diarrhœa *lienterica*, the aliment passing in the evacuations almost unaltered, occurring principally in children about the first, and between the first and second dentition, and occasioned by the ordinary exciting causes of diarrhœa.

The duration of this disease must of course be materially influenced by the persistance of the cause that excites it. Its ordinary varieties being generally dependent on temporary causes, are of short duration; but the increased secretion of bile by the liver, and of mucus by the mucous follicles, and the irritation of the intestinal canal from dentition, may be protracted to an indefinite period; and the disease dependent on the excited state of these organs may consequently become chronic, continuing for months together to harass the patient and enfeeble the constitution. In these cases, when a cure is apparently effected, very slight causes are capable of bringing back the disease; and during the period of convalescence the utmost caution is always necessary to avoid errors in diet and any exposure to cold or wet.

The immediate danger from a very severe attack of diarrhœa, or from its passing from the acute into the chronic state, is, that it should terminate in acute inflammation of the bowels (enteritis); or chronic inflammation and ulceration of the bowels (dysentery); or intus-susception (the passing of one convolution of the intestines into another), induced by the increased peristaltic action of the bowels; or enlargement, hardening, and obstruction of the mesenteric glands, and the consequent wasting of the body (marasmus), one of the most common forms of disease by which the existence of infants and children is cut short.

There are several diseases with which diarrhœa may be confounded, from which it is important that it should be distinguished. From the far more serious malady termed dysentery it is distinguished by the absence of fever, by the absence of blood in the evacuations, and by the absence of the painful, distressing, and ineffectual desire to evacuate the contents of the bowels which is called tenesmus. It is distinguished from cholera by the absence of spasms of the muscles, so constant and distressing in the latter disease, by the slighter degree or the total absence of vomiting, and by the milder character and the much less rapid progress of the entire disease. But the bilious and even the pestilential cholera frequently commence with one or other of the preceding forms of diarrhœa. Life often depends on the clearness and promptitude with which the diagnosis is made between diarrhœa from irritation, constituting the crapulous and bilious forms of the disease, and the diarrhœa from inflammation, which often appears under the serous and mucous forms. The diagnosis is chiefly to be drawn from the marked difference in the constitutional symptoms when the diarrhœa is the consequence of an inflammatory state of the internal surface of the intestines. In this case there is always present a greater or less degree of fever; the skin is hot, or alternately hot and chilly; the pulse is more or less excited, and the strength prostrate. The pain in the bowels is obscure and dull rather than griping, the abdomen is tender on pressure, and it is in this case more especially that the tongue is preternaturally red at the edges and the tip, and that its papillæ are enlarged and red.

Though diarrhœa is often a trifling disease, and even a remedial means adopted by nature to prevent the occurrence of more serious evils, yet the serous and mucous forms of it, more especially when they pass into a chronic state, are apt to terminate in dangerous and fatal maladies, and their management requires great and persevering care. Instances are by no means unfrequent in which the ultimate event proves fatal, in consequence of their neglect, or of the medical treatment and the remedies being injudicious. Indeed the treatment of diarrhœa in general requires much discrimination, for a very trifling form of it is easily converted by mismanagement into a highly dangerous disease. The chief difficulty is to detect the exact nature of the exciting cause, and the exact condition of the excited organ, which alone can guide to the selection of one of two opposite plans of treatment, the administration of purgative or of opiate medicines. If the irritation arise from too large a quantity of stimulating food and drink, abstinence alone is sufficient to effect a cure; but if, notwithstanding the abstinence from food, the disease continue, it is necessary to ascertain whether the irritation be kept up by the retention of irritating matters, or whether the alimentary canal itself be in a preternaturally irritable and excited state. If the former, purgative medicine of some kind or other is indispensable, but the choice of the purgative is by no means a matter of indifference. It should have the power of evacuating the contents of the bowels without irritating the mucous surface. For this purpose castor oil is one of the best medicines; or, if a somewhat stronger purgative be required, infusion of senna with manna. It is often attended with the best effects to combine a few drops of laudanum with the aperient. When the irritating contents of the stomach and intestines are removed, a mild and frequently repeated sedative should be prescribed, one of the best of which consists of two drachms of almond oil with two drachms of mucilage of gum arabic in an ounce of rose or peppermint water, with from five to ten drops (according to the severity of the case) of laudanum or half a dram or more of the tincture of hyoscyamus. If the secretions are disordered, five grains of blue pill or of hydrargyrum cum creta, with the same quantity of the compound powder of ipecacuanha, taken every night, or every other night, at bed-time, with a tea-spoonful of castor oil, containing a few drops of laudanum, the morning following, will soon restore them to a healthy state. Of course the diet should consist only of the mildest alimentary substances; for as long as the alimentary canal continues irritable, food and drink, even of the ordinary stimulating properties, will keep up or re-excite the diarrhœa.

The exciting cause of the biliary variety of diarrhœa is often inflammation of the liver (hepatitis). When there are present any indications of this, blood-letting, or local bleeding by cupping or leeches, must precede all other remedies; and the abstraction of blood must be repeated at short intervals until the inflammatory state of the liver is removed; then mild mercurials, with mild purgatives, are necessary. This is by no means a variety of diarrhœa which can be cured by opiates. The exhibition of any remedies of this class, which, when judiciously managed, are sometimes highly advantageous, requires peculiar discrimination and skill. In the serous and mucous diarrhœa, when there is present no proper fæculent matter, all this having been previously discharged, it is absurd to give purgatives; such medicines can only still further irritate the over-excited organs. Leeches to the abdomen, the warm bath, demulcents with opiates, the chalk mixture, and the strictest regulation of the diet, are necessary.

The diarrhœa, so easily excited, so constantly present, in infants and young children, requires a peculiarly cautious management. When it is connected with dentition it is pregnant with danger to stop the discharge, or even to restrain it, unless it become excessive, and then it should be moderated, not stopped; and the mildest means should be employed to accomplish this object, which should never be attempted without at the same time paying the strictest attention to the diet, air, and exercise of the child. Death is often produced in infants at this critical period of the infant's life by the exhibition of opiates to stop this discharge. The proper remedies are the choice of the blandest articles of food, the avoidance of over-feeding, two or three grains of hydrargyrum cum creta at night, and the tepid bath.

It would swell this article much beyond our limits to enter into a full account of all the precautions which are necessary on the part of the mother and nurse, as well as of the medical practitioner, in relation to this very important subject. All that is possible is to direct attention to the points of essential importance.

DIARY, from the Latin *Diarium*, which again is from *Dies*, a day. The original and proper meaning of the word *Diarium* among the Romans was the daily allowance made to slaves for their sustenance, as *Menstruum* was their monthly allowance. *Diurnum* was another word for the same thing. [ACTA DIURNA.] In later times however either word came to be used for a note-book, or other register of daily occurrences, which had formerly been called (after the Greek) an ephemeris. It is only in the sense of a daily register that the word diary is used in English; and, naturally enough, it is commonly understood to imply specifically a register of occurrences in which the writer has had a personal share, or which have at least in some sort come under his own observation by having happened in his own time. For instance, although a history of the transactions of a former age, composed in a particular form, might be entitled annals, such a history, however minute, would scarcely in any case receive the name of a diary. A diary is etymologically the same thing with a day-book or journal; the latter word being a modernized form of diurnum, as diary is of the synonymous diarium of the same parentage. The French language has only the form *journal*; the Italian, like the English, has both forms, *diario* from *diarium*, *giornale* from *diurnum*, both ultimately from *dies*.

DIASCHI'SMA, a term employed in antient and in speculative music, but not in practical use among modern musicians. It is the half of a minor semitone or diesis. [DIESIS.]

DIASTO'PORA. [POLYPIARIA MEMBRANACEA.]

DIASTYLE. [CIVIL ARCHITECTURE, vol. vii., p. 220.]

DIA'STYLIS, a genus of crustaceans established by Mr. Say.

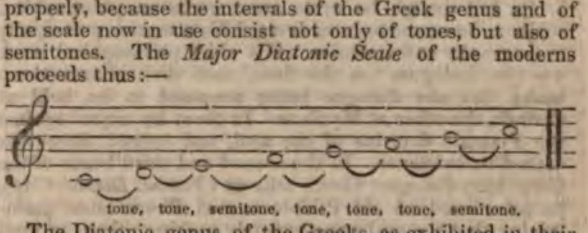
Generic Character.—Four *antennæ* placed nearly on the same line; the intermediate antennæ bifid, having a peduncle of three joints, the external simple, with the first joint long, and without a scale. External *jaw-feet* very large, pediform, very much approximated to the front, with the first joint long and compressed, and the others very small, cylindrical, and nearly equal. *Corselet* smooth, of six segments, of which the first, larger than all the others together, is terminated anteriorly by a short, obtuse, triangular rostrum, crenelated on its lateral edges. Six pairs of bifid *feet*; those of the first pair truncated at the end and shorter than the external jaw-feet; those of the second terminated in a point; those of the third, fourth, and fifth pairs raised, pointed, without a nail, and terminated by strong hairs. *Abdomen* narrower than the *thorax*, formed of six segments, the two last of which support the natatory feet. *Tail* biarticulated, provided on each side of the first segment with a single bifid style, and on the extremity of the second with a simple cylindrical style.

Example, *Diastylis arenarius:* length one-fifth of an inch. *Locality*, the coasts of Georgia and Florida.

Mr. Say is of opinion that the *Cancer scorpionides* of Montagu, from the English coasts, and the *Cancer Esca* of Gmelin, from those of Norway, ought to be referred to this genus.

DIATES'SARON, in Greek music, the interval of the Fourth.

DIATON'IC, in music (διὰ, *through*, and τόνος, *a tone*), a term applied to the first of the three antient genera, and of the three modern scales, but in both cases rather improperly, because the intervals of the Greek genus and of the scale now in use consist not only of tones, but also of semitones. The *Major Diatonic Scale* of the moderns proceeds thus:—



The Diatonic genus of the Greeks, as exhibited in their several *modes*, comprised five tones and two semitones, differently disposed: that of the Lydian mode, according to Sir Francis Styles (*Transactions of the Royal Society*, 1760), corresponded, as regards the position of the intervals, to our major diatonic scale. [SCALE.]

DIAZO'MA. [BOTRYLLUS, vol. v., p. 259.]

DIBDIN, CHARLES, in whose person the British bard may be said to have been revived, had his birth at Southampton in 1745, near which place his grandfather, a considerable merchant, founded a village that bears his name. When Dibdin was born, his mother had reached her fiftieth year, and he was her eighteenth child. He had a brother, Thomas, twenty-nine years older than himself, on whose death he wrote the beautiful ballad, 'Poor Tom Bowling.' This gentleman was captain of an East-Indiaman, and father of Thomas Frognall Dibdin, D.D.

The subject of the present notice was educated at Winchester, and originally designed for the clerical profession, but his love for music predominated, and after receiving some instruction from the celebrated Kent, organist of Winchester cathedral, he was sent to London, and commenced his career, as poet and musician, at the early age of sixteen, when he produced an opera at Covent Garden theatre, written and composed by himself, called *The Shepherd's Artifice*. A few years after he appeared as an actor, and was, in 1768, the original Mungo in his own *Padlock*. In 1778 he became musical manager of Covent Garden theatre, at a salary of ten pounds a week. About the year 1782 he built the Circus theatre (afterwards opened under the name of the Surrey), which continued under his management about three or four years. In 1788 he published his *Musical Tour*, in one vol. 4to.; and in 1789 presented to the public, at Hutchins's auction rooms, King Street, Covent Garden, the first of those entertainments whereby he so eminently distinguished himself,—and of which he was sole author, composer, and performer,—under the title of *The Whim of the Moment*. In this, among sixteen other songs, was the ballad 'Poor Jack,' an effusion of genius that immediately established his reputation, both as a lyric poet and melodist. The year 1791 saw Dibdin in his Sans Souci, an exhibition-room in the Strand, fitted up by him; and in 1796 he erected a small theatre in Leicester Fields, giving it the above-named title. This he sold in 1805, and retired from public life; but not having been provident while the means of making some provision for the future were in his power, his retreat was not accompanied by independence. This having been properly represented, government granted him a pension of 200*l*. per annum, an act evincing both a sense of justice and a right feeling. Of this he was for a time deprived by Lord Grenville, but a more liberal ministry restored it. Towards the close of the year 1813 he was attacked by paralysis, and died in the July following. Mr. Dibdin published one or two novels, and some smaller works, but his fame is built on his songs, of which—so prolific was his muse, and so great his facility in composition—he produced the amazing number of nine hundred! The character of these, and of their author considered as a writer, is thus given in the *Harmonicon* for April, 1824: —‘ Had Dibdin written merely to amuse, his reputation would have been great, but it stands the higher because he is always on the side of virtue. Humanity, constancy, love of country, and courage, are the subjects of his song and the themes of his praise; and while it is known that many a national foe, whether contending or subdued, has experienced the efficacy of his precepts, we are willing to believe that the sufferings which the lower orders of the creation are too commonly doomed to endure have now and then been a little mitigated through the influence of his persuasive verse.’

DICÆARCHUS, the son of Phidias, was born in the city of Messana in Sicily. He was a scholar of Aristotle, and is called a peripatetic philosopher by Cicero (*De Officiis*, ii. 5); but though he wrote some works on philosophical subjects, he seems to have devoted his attention principally to geography and statistics. His chief philosophical work was two dialogues ‘on the Soul,’ each divided into three books, the one dialogue being supposed to be held at Corinth, the other at Mytilene. In these he argued against the Platonic doctrine of the soul, and indeed altogether denied its existence. In the second and third books of the Corinthian dialogue, Cicero tells us (*Tuscul. Disput.* i. 10), he introduced an old Pthiote named Pherecrates, maintaining that the soul was absolutely nothing; that the word was a mere empty sound; that there was no soul either in man or beast; that the principle by means of which we act and perceive is equally diffused throughout all living bodies, and cannot exist separated from them; and that there is no existence except matter, which is one and simple, and whose parts are naturally so arranged that it has life and perception. The greatest performance of Dicæarchus was a treatise on the geography, politics, and manners of Greece, which he called ‘the Life of Greece’ (Ἑλλάδος βίος). Of this a fragment has come down to us, which is printed in Hudson's *Geographici Minores*, and also edited by Marx in Creuzer's *Meletemata e Discipl. Antiquitatis*, p. iii., p. 174. It has been conjectured, with great appearance of truth, that the citations from Dicæarchus, in which his treatises ‘on Musical Contests,’ ‘on the Dionysian Contests,’ &c., are referred to, are drawn from this comprehensive work, and that the grammarians have named them by the title of the subdivision to which these subjects belonged, instead of the leading title of the book. (See Näke in the *Rhein. Mus.* for 1833, p. 47.) Dicæarchus's maps were extant in the time of Cicero (*Ep. ad Att.* vi. 2); but his geography was not much to be depended upon. (Strabo, p. 104.) Cicero was very fond of the writings of Dicæarchus, and speaks of him in terms of the warmest admiration. (*Ep. Att.* ii. 2.) In the extant fragment Dicæarchus quotes Posidippus, and must therefore have been alive in 289 B.C. We must distinguish him from a Lacedæmonian grammarian of the same name, who was a pupil of Aristarchus (see Suidas).

DICÆ'LUS, a genus of Coleopterous insects. [Licinus.]

DICÆUM. [Creeper, vol. viii., p. 149.]

DI'CERAS. [Chamacea, vol. vi. p. 469.]

DICHELE'STHIUM. [Pœcilopoda.]

DICHO'LOPHUS. [Cariama, vol. vi. p. 291.]

DICHOTOMA'RIA. [Pseudozoa.]

DICHO'TOMY, a term in botany, employed to express a mode of branching by constant forking. The first stem or vein of a plant divides into two branches, each branch divides into two others, and so on. It is only in the veins of fern leaves, and of those of some of coniferous species, and in the stems of Lycopodiaceous plants, that this mode of division exists as a general character. It however does occur elsewhere; for example, the Doom Palm of Thebes is remarkable for its dichotomous branches, and the Screw Pines (*Pandanus*) have a similar habit.

DI'CLINOUS, an obsolete term in botany, signifying that a plant has its sexes in distinct flowers. It comprehends all the Monœcious and Diœcious plants of Linnæus.

DICOTYLE'DONS, a natural class of plants, deriving their name from the embryo having in general two seed-leaves, or cotyledons; a character to which there are however some exceptions. The genus Ceratophyllum has several; Bertholletia appears to have none; in Tropæolum and many others they are consolidated into one; and Cuscuta is certainly destitute of them. Like all others, therefore, the character derived from the cotyledons, nearly universal as it is, has its exceptions. Hence botanists associate with the character derived from the embryo others derived from the mode of growth, leaves, flowers, &c., and the whole taken together give the real diagnosis of the class to which the name of Dicotyledons is applied.

The stems of dicotyledons are probably in all cases branched, except when a plant is, from its weakness and minuteness, unable to reach any development beyond that of the first stage from the plumule. In herbaceous plants that are called stemless, a sort of branching takes place by the formation of small short stems upon the crown of the axis of growth. They have the pith, wood, and bark distinctly separated, and the wood traversed by medullary rays. This wood, if more than one year old, consists of concentric circles, each of which is formed on the outside of that which immediately preceded it; the consequence of which is, that the oldest part of a branch will necessarily consist of the largest number of layers, and will therefore be the thickest: hence the branches of dicotyledons are always cones, although usually very long ones [Exogens], and not cylinders. But to some of these characters the exceptions are not a few. It is difficult to trace any distinction of pith, wood, and bark in the stem of the water-lily (Nymphæa); there are no concentric circles in the wood of Aristolochia, and several other genera; and it is impossible to show by measurement that the stems of many irregular tropical dicotyledonous climbers vary perceptibly in diameter for considerable distances.

The leaves of dicotyledons are articulated with the stem, so that at a particular time they are thrown off, and leave a clean scar behind them, as in all the trees, whether deciduous or others, which are found in the open air in England. Their veins are repeatedly branched, so as to form a netted apparatus within the parenchyma. But although by far the largest part of dicotyledons are thus constructed, yet we have contradictions to this also. For instance in Dianthus, and a great many other genera, the leaves have no veins except the midrib, and there are many herbaceous plants whose leaves never drop fairly off the stems.

The number of parts in the flower of dicotyledonous plants is four or five; that is, four or five sepals, four or five petals, and the same number of stamens, present in either a complete or imperfect state; or if the number is greater, it is some power of four or five. But in Ranunculus Ficaria, most Anonaceous plants, and several more, the parts in the flower are three.

Finally, when the seeds germinate, the embryo simply extends the point of its radicle in the form of a root, to seek for nourishment in the soil. [Exorhizæ.] But although this is, as far as is yet known, a character without exception, nevertheless it has been too little studied for us to assert that it is more free from anomalies than other characters.

Hence it is to be observed, that it is neither the two cotyledons, nor the exogenous stem, nor the concentric circles of wood, nor the reticulated disarticulating leaves, nor the quinary or quaternary flowers, nor the exorhizal germinations, which by themselves characterize the class of dicotyledons, *but the combination of those characters;* and that the absence of some one of them is immaterial; so that a plant may be essentially a dicotyledon, although it has any number of cotyledons except two.

The dicotyledons of Jussieu comprehended the plants now separated under the name of Gymnosperms, and, together with Monocotyledons and Acotyledons, constituted the whole vegetable kingdom. They probably consist of at least two-thirds of all known plants: in the state of trees, shrubs, or herbaceous plants, they are found wherever phanogamic vegetation can exist, and they and Gymnosperms together constitute exclusively the arborescent scenery of all cold countries.

DICO'TYLES. [Hog.]

DICRU'RUS. [Laniadæ.]

DICTAMNUS, the botanical name of the fragrant herbaceous plant called Fraxinella by gardeners.

DICTA'TOR was the highest extraordinary magistrate in the Roman republic. Though the name obviously contains the element *dic* (from *dico*), it was doubted by the Roman writers whether the title had reference to the mode of his nomination or to his power. He was also called by the old name of Magister Populi, and in Greek *διούπατος*, or ‘double consul.’ After the expulsion of the kings the consulship was established. The two consuls possessed the same power as the kings in the administration of the state and the command of the army, yet their authority was subject to some restrictions, and principally by the appeal that could be made from their decisions. [CONSUL.] The two consuls, possessing equal authority, often differed in their views and opinions; a circumstance which necessarily caused jealousy and disunion, particularly in the command of the army when on active service. In extraordinary emergencies, the republic therefore required a single magistrate, invested with ample authority. Such circumstances led to the establishment of the dictatorship. The first dictator was created about the year 253 A.U.C., or 501 B.C. (Liv. ii. 18.)

The dictator united in himself the power of the two consuls; and the authority of all other magistrates, except that of the tribunes, ceased as soon as he was appointed. He possessed the whole administrative power of the state, and the command of the army without any restrictions. (Dion Cassius, according to Zonaras, vii. 13, where a reference to a lost book of Dion is given. Dion Halic., v. 70, 73.) He had the power of life and death, and there was no appeal from his decision. Both within and without the city he was attended by twenty-four lictors, with their fasces and axes. The dictators were not chosen, like the other magistrates, in the comitia, but they were appointed by one of the consuls, in conformity with a vote of the senate. Sometimes the senate itself appointed the dictator, and in some instances he was elected by the comitia. At first he was taken only from the patrician order, but afterwards (B.C. 356) also from the plebeians. After his election, the dictator nominated the master of horse (magister equitum), who commanded under him. It was only when the state was menaced by sudden danger from within or without that a dictator was nominated; but in the course of time a dictator was elected to preside at the elections in the comitia, when the consuls were abroad, and therefore could not preside; and also on some other public solemnities. (Liv. vii. 3; viii. 18 and 23.) The dictator continued in office for six months, but he commonly resigned as soon as the danger was over which had led to the nomination. The dictator was not allowed to leave Italy, or to enter the city on horseback. Yet there are instances in which the dictator left Italy, as for example in the first Punic War, when a dictator commanded in Sicily. The rule that he should continue in office only six months was also neglected; Sylla and Julius Cæsar were nominated perpetual dictators, the former in the year 81 B.C., and the other after his victory at Pharsalus. The office seems never to have been filled from B.C. 202 to the time when Sylla, the head of the oligarchical party, was made perpetual dictator. J. Cæsar, who was the head of the democratic party, or perhaps rather chose that party merely that he might, by being at the head of one of the great divisions which distracted the state, prepare the way for his own unlimited power, after being dictator five times, became dictator for life. Augustus declined the office, though offered to him by the people (Suetonius, *Aug.* 52), and the title of dictator was never assumed by the emperors of Rome.

These are the received opinions as to the Roman dictators; but in Niebuhr's Roman history we find other views of the subject, to which we shall briefly advert. According to him, the dictatorship was of Latin origin, and was introduced from the Latins among the Romans. The object of the Roman dictatorship was to evade the Valerian laws, and to establish the power of the patricians over the plebeians; for the appeal granted by those laws was from the sentence of the consuls, and not from that of the dictator. The later Romans had but an indistinct knowledge of the dictatorship of the antient constitution. Dion Cassius is in error, when (without excepting the patricians) he asserts that in no instance was there a right of appeal from the dictator, and that he could condemn knights and senators to death without a trial. Dionysius is also in error, when he says that the dictator decided on every measure according to his own pleasure. It is incorrect to suppose that the appointment of the dictator in all cases rested with one of the consuls; for the conferring of kingly power (such as that of the dictator was) could never have been intrusted to a single person. The pontifical books have preserved so much as this, that the dictator was nominated by the senate, and that the nomination was approved by the people. As the plebeians increased in power, the dictatorship was seldom required, and then only for matters of less importance; and in such cases the nomination was left to the consuls.

For a general sketch of the dictatorial power, the reader may consult Creuzer, *Abriss der Römischen Antiquitäten, &c.*, Leipzig, 1824; Niebuhr's chapter *on the Dictator*, and his *Remarks on the Relationship of the Dictator and the Master of the Horse*, vol. i. Engl. Trans.

DICTIONARY, the English form of *Dictionarium*, a word of low or modern Latinity, which from its etymology should signify properly a book of phrases or modes of expression. The term however has been generally applied to any work which professes to communicate information on an entire subject, or entire branch of a subject, under words or heads digested in the order of the alphabet. This alphabetical arrangement appears to be the distinctive peculiarity of what is called a dictionary; but to constitute the work a dictionary, it should seem that there must also be attached to each of the terms, so arranged, some explanation or interpretation. Thus, an Index, in which words or titles are merely put down in alphabetical order, with nothing more than a reference to some page or passage appended to each, is not a dictionary. The alphabet itself is not a dictionary. Again, a dictionary, however arbitrary or artificial may be the order in which its parts are distributed, must profess some unity and completeness of design. It must profess, as has been said, to go over a whole subject, or field of knowledge, of greater or less extent. Thus a mere list of miscellaneous particulars, even with explanatory remarks or comments annexed, is not a dictionary, but a catalogue. A collection of plays or of pamphlets might be arranged in the order of the alphabet, but would not on that account make a dictionary. That name is not applicable, and is never given, even to the most extensive enumeration and account of things which are merely brought together, without constituting when collected a natural system or complete body of knowledge.

Within the limitations noted, the term dictionary is applied to works on all kinds of subjects, and with every diversity of object. Dictionaries have sometimes been divided into three classes or descriptions:—1. Dictionaries of words. 2. Dictionaries of facts. 3. Dictionaries of things. And although objections may be made to the principle of this distribution (as has been done by D'Alembert in the *Encyclopédie*, article *Dictionnaire*), it is sufficiently convenient for practical purposes, and we shall therefore adhere to it in what we have now to say.

I. Dictionaries of Words. This is the original application of the word dictionary, and the sense in which it is commonly understood when it stands alone. It answers in this sense to the Greek lexicon, and although etymologically that term, like the term dictionary, ought perhaps to signify a book of phrases or modes of expression, yet among the Greeks it seems rather to have denoted a book that explains words. A dictionary or lexicon indeed usually combines an explanation of phrases with an explanation of single words. When it contains nothing beyond an explanation or translation of single words, it is more distinctively called a vocabulary or word-book. The word vocabularium, we believe, is not found in the Latin of antiquity, any more than dictionarium. A glossary, in Latin *glossarium*, which is used by the later classics, from the Greek *glossa* (γλῶσσα), 'a tongue' or 'language,' is generally understood to mean, an explanation, more or less diffuse, of terms of unusual occurrence. Among the Greeks themselves indeed *glossa* was used for a foreign, or otherwise peculiar word or form of expression. (Aristot. *Poet.* c. 38.) As there is nothing in the etymology of the term glossary however to confine it to this explanation, many examples may be found of its employment in a more extended sense. Some dictionaries profess to have more peculiarly for their object the explanation or interpretation of phrases; such, for example, as the well-known volume on the Latin language entitled 'Phraseologia Generalis,' by William Robertson, 8vo. Camb. 1681. Some dictionaries and vocabularies apply only to some particular author or work; such as Damm's Lexicons or Concordances, as they are called, of Homer and Pindar, since combined into the Lexicon Homerico-Pindaricum, the Lexicon Ciceronianum of Marius Nizolius, &c. Such dictionaries, when well compiled, are among the most valuable aids the student can avail himself of. Nor are they of use only in studying the authors of antiquity; the works of some modern writers have been very ably illustrated in this way, as, for instance, by Mr. Tyrwhitt in his glossary to Chaucer, and by Archdeacon Nares in his glossary to Shakspeare and his Contemporaries, 4to. London, 1822. Even a mere verbal index, with little or no explanation of the meanings of the words, is often much more useful than a professedly interpreting dictionary, by merely bringing together or pointing out by reference the different passages in which each word is used, so that they may be compared with one another. Such mere indexes as those attached to the Delphin Classics are of great value in this way, in addition to their proper use of enabling any passage to be found of which even a single word is recollected. Few of our English classics have been illustrated by such complete verbal indexes; there is one to Milton's Paradise Lost, 12mo. London, 1741. Ayscough's Index to Shakspeare is only an index to the 'remarkable' passages and words; and although its professed design is 'to point out the different meanings to which the words are applied,' it is not very successfully compiled for that purpose. Still it is a useful book, as being the best verbal index to Shakspeare we yet possess. Indexes of this description serve in fact the same purpose with Concordances, although that term has been for the most part confined to works relating to the Scriptures. (CONCORDANCE.) Some works entitled dictionaries, indeed, comprehend concordances more or less complete; as, for instance, Schleusner's 'Novum Lexicon Græco-Latinum in Novum Testamentum,' and the Ionic lexicon of Schweighæuser, which is a sort of concordance to Herodotus, and that to Polybius by the same scholar.

Some of these dictionaries to particular authors, or works, have exclusively or principally in view the illustration of the style of the author, or his use of particular words. One of the best of these is Ernesti's 'Index Latinitatis Philologico-Criticus' to Cicero. This work in fact, although styled merely an index, is much more a dictionary of interpretation and commentary than the lexicon just mentioned of Nizolius, which however is much the more minute and extensive index of the two. The instance may serve to show with what latitude the two titles are applied. And the title of index, it may be added, has been sometimes given to works which are not really indexes in any respect, but simply dictionaries or vocabularies. We may mention as an example, 'Olai Vereli Index Linguæ Veteris Scytho-Scandicæ, sive Gothicæ, opera Olai Rudbeckii editus,' fol. Upsalæ, 1691, which is merely a vocabulary of the Gothic. Dictionaries of languages have also been published under many other titles. A Thesaurus, or Treasury, is a very common title of such a book. Thus Faber's Latin dictionary is styled 'Thesaurus Eruditionis Scholasticæ,' and H. Stephens' Greek lexicon is entitled 'Thesaurus Græcæ Linguæ.' Edward Philips entitles his English dictionary a 'World of Words.' In some cases an attempt has been made by means of a dictionary or index, not only to point out the writer's use of particular words, or their meaning in particular passages of his works, but also to give an abstract of his text. This has been done in the index to Hippocrates, by Fœsius, entitled 'Œconomia Hippocratis Alphabeti serie distincta, in qua Dictionum apud Hippocratem omnium, præsertim obscuriorum, usus explicatur, et velut ex amplissimo Penu depromitur, ita ut Lexicon Hippocrateum merito dici possit,' fol. Francf. 1688. Of dictionaries of words also, some are dictionaries of etymologies, some of the quantities of syllables (as the common Latin 'Gradus ad Parnassum,' and Morell's 'Thesaurus Græcæ Poeseos, sive Lexicon Græco-Prosodiacum,' improved and enlarged by Maltby); some of terminations (as in English, Walker's 'Rhyming Dictionary'), and Hoogeveen's 'Dictionarium Analogicum Linguæ Græcæ.' Some dictionaries of the oriental tongues and of the Greek tongue exhibit the words arranged according to their supposed roots; and some Latin dictionaries have also been constructed upon this plan. Of professed dictionaries of derivations one of the most elaborate, though it is far from being a correct or philosophical work, is the Etymologicon Linguæ Latinæ of G. J. Vossius. Others are the Dictionnaire Etymologique de la Langue Française, of Menage; the Origines de la Langue Italienne, of the same author; the Etymologicon Linguæ Anglicanæ, of Stephen Skinner, fol. 1671; and the Etymologicon Anglicanum of Francis Junius, fol. Oxon, 1743. A very ambitious attempt has been made by Mr. Whiter in his Etymologicon Magnum, or Universal Etymological Dictionary on a new plan, 3 vols. 4to., Camb. 1800—1822, to construct a dictionary of the elements of all human language. Mr. Booth, in his Analytical Dictionary of the English Language, has set an example of perhaps the happiest mode in which an account of words can be given according to their etymologies or affinities. By making each radical term the text of a short essay, in the course of which the history of all its derived and connected terms is traced and illustrated by quotations, references to manners and customs, and anecdotes of various kinds, the writer has rendered his dictionary as entertaining as it is instructive, and adapted it not only for occasional consultation but for continuous reading.

Any account of the dictionaries of particular tongues would be out of place here. There is a Table Alphabetique des Dictionnaires, by Durey de Noinville, published in 1758, which however is asserted to be very incomplete, even for that time. A very elaborate dissertation on lexicons and glossaries in general, and on those of the Greek language in particular, by P. J. Maussacus, is inserted in most of the editions of the Greek lexicon of Harpocration, entitled Lexicon Decem Oratorum; and the same subject has also been treated by several other writers who are enumerated in Morhoff's Polyhistor, lib. iv. cap. 7. In the portion of Morhoff's third book, from chapter 4th to chapter 9th inclusive (vol. i. pp. 743—830, edit. 1747), is given an account of the principal dictionaries of the modern European tongues, of the oriental tongues, of the Greek, and of the Latin tongues. See also De Bure's Bibliographie Instructive, vol. iii., p. 1—86.

In some dictionaries the words are explained in the same language to which they belong; in many others the words of one language are interpreted by corresponding words in another language. In some the interpretation or translation is into several languages; as, for instance, in Minsheu's Dictionary of Eleven Languages, namely, English, Welsh, German, Dutch, French, Italian, Spanish, Portuguese, Latin, Greek, and Hebrew, fol. London, 1617; and in a dictionary printed at St. Petersburg in 3 vols. 4to., in 1785, in which the words and phrases are given in French, German, Russian, and Latin.

Although, as Maussacus in his Critical Dissertation just noticed has taken great pains to prove, books both of γλῶσσαι, or unusual words, and of λέξεις, or idioms, are frequently referred to or mentioned by the Greek and Latin grammarians and other writers, it does not clearly appear that all of these were what we should now call dictionaries, that is to say, were collections of vocables and phrases alphabetically arranged. The oldest extant Greek lexicographer is Apollonius the Sophist, a contemporary of Augustus; his work entitled Λέξεις Ὁμηρικαί, or 'Homeric Words,' though much interpolated, is very useful. All the other original Greek lexicons and glossaries we have, such as the Onomasticon (or Collection of Synonymes) of Julius Pollux, the lexicons of Suidas, Harpocration, and Hesychius, and the Etymologicon Magnum, sometimes attributed to Marcus Musurus, although of the authors of some of them the exact age is disputed, were undoubtedly compiled subsequent, and most of them probably long subsequent to the commencement of the Christian æra. It is supposed indeed that they were founded upon older compilations of the same kind; but of the form of those lost works we know nothing. It may be reasonably doubted if either the Greeks or Romans were in the habit of making use of dictionaries in studying a foreign language or dialect, as has been the general practice in modern times. They would seem rather to have uniformly followed what may be called the natural method of learning the language from conversation with those who spoke it, being the method by which we all learn the language we acquire both most easily and most perfectly, our mother tongue, and that by which alone a real knowledge and command of any language can be acquired. Although, however, the utility of a general dictionary of a language as an instrument either for teaching the language to youth in schools, or for enabling a student to master it in any circumstances, may well be questioned, there are obvious considerations which make it desirable that we should possess such dictionaries of all languages. When a dictionary of a language professes to be more than a mere vocabulary, it is usual for it to contain along with the interpretation or explanation of the meaning of each word, some account of its etymology or derivation, and also of its grammatical usage. Except when the dictionary is exclusively etymological, perhaps all that ought to be attempted in regard to the foreign extraction of words is to note the language from which each may be supposed to have been immediately borrowed. But merely to append the supposed original word of the foreign language, as is generally done, conveys little valuable information in any case, and is very apt to lead to misconception. If it is desired to exhibit the nature of the change which the forms of the words have undergone in passing from the one tongue to the other, this will be better done by a short statement on the subject once for all, in which the several modes and incidents of the transference should be systematically arranged and illustrated by examples, and the principle of each explained. It would be of fully as much importance however that in every dictionary of a language the connection of each word with other words in the same language, or the native root from which each has sprung, should be distinctly marked whenever it is not obvious. This reference of each word to the proper family to which it belongs contributes more to make its meaning clear and to point out its correct use than any definition can do. And such a notice of the root of the word would naturally lead to, and should be followed by, as precise a statement as possible of its primitive and most simple meaning; after which should come a chronological deduction of the changes it has undergone, as far as they can be traced, both in signification and in form, the whole definition being concluded by an explanation of its metaphorical and other secondary or transferred meanings. If its use in each sense can be illustrated by an example, such quotations are, for various reasons, in the highest degree satisfactory and valuable. Any remarkable uses of the word in particular passages of standard authors ought at least to be adverted to and explained; and a notice of its peculiarities of construction, or the manner in which it is connected with other words in a sentence, should never be omitted. There are some dictionaries in which all this has been attempted, but perhaps scarcely one in which it has been quite satisfactorily executed. Among the most carefully compiled dictionaries of modern languages are that of the Italian, entitled Vocabolario degli Academici della Crusca, extended in the latest editions to 6 vols. fol.; and that of the French, entitled Dictionnaire de l'Académie Française. But in both these works, especially in the latter, the design principally kept in view has been to guard the purity of the language. There is also a Spanish dictionary of great reputation, entitled Diccionario de la Lengua Castellana, compuesto por la Real Academia Española, 6 vols. fol., Madrid, 1726, &c. In English, Johnson's Dictionary has been accounted the standard work of its class ever since its appearance, in 2 vols. fol., 1755; but although it was a great achievement for an individual, and its definitions in particular afford remarkable evidence of its author's ingenuity and command of expression, it is in many respects as far as possible from being what a dictionary should be. Its etymological part (as Horne Tooke has long ago shown) is little better than so much rubbish; and it is characterized throughout by a total want of method and philosophical views. Its author indeed was neither metaphysician, nor linguist, nor archæologist enough for the task he undertook. Some valuable matter has been added to the last edition of the English Dictionary (augmented to 6 vols. 4to.) by the Reverend Mr. Todd; but the philosophical character of the work has received no improvement in his hands. Perhaps the nearest approach that has been made to a philosophical English dictionary would be that given in the miscellaneous and lexicographical department of the Encyclopædia Metropolitana, if the execution were equal to the design, which is explained in the prospectus as being to exhibit 'the history of English words; the citations arranged according to the age of the works from which they are selected, yet with every attention to the independent beauty or value of the sentences chosen which is consistent with the higher ends of a clear insight into the original and acquired meaning of every word.'

II. Dictionaries of Facts. This class comprehends dictionaries of history, biography, mythology, geography, archæology, and all others that deal chiefly or exclusively with events that have happened, or are supposed to have happened, or with facts that exist or have existed. Many of the principal works of this description are enumerated in the article Biography: and under Bibliography will be found an account of another large division of them. We may here observe that some of the old Greek lexicons already noticed were dictionaries of facts as well as of words; the lexicon of Suidas, for instance, is, in the greater part, made up of fragments of biography, history, and geography, and often contains large extracts from various writers both extant and lost. The work of Stephanus Byzantinus, sometimes entitled Ἐθνικὰ (the Ethnology), more commonly Περὶ Πόλεων (the Book of Cities, or rather of States), is chiefly a geographical and archæological dictionary, and is the oldest compilation of that description that exists. Its meagre details under each head assimilate it in some respect to an imperfect gazetteer. In modern times the number of dictionaries that have appeared, professing to present a view of a more or less extensive field of facts, has been very great. Besides the various historical, biographical, and geographical dictionaries, general and particular, and the bibliographical dictionaries, there are dictionaries of antiquities, of architecture, of heraldry, of painting, of music, of botany, of law, of legal decisions, of commerce, of medicine, of surgery, and of almost every other department of human knowledge. Human knowledge, however, or what is commonly called or reckoned such, in almost all its departments, is such a mixture of ascertained facts and of mere opinions or speculations, that there is hardly any of these dictionaries which is a dictionary of facts merely. Opinions, indeed, considered historically, are themselves facts, and as such ought to be recorded and arranged in dictionaries as well as other facts. Discussion also often places doubtful facts in a clearer light, and a dictionary may be as convenient a vehicle for such discussion as any other book. But a most useful class of books, of which we have yet scarcely a specimen, would be a set of dictionaries or tabular expositions of facts, and nothing else. They would serve, among other purposes, as maps of the extent and boundaries of the different departments of human knowledge, and most useful directories in the prosecution of all inquiries having in view the enlargement of those boundaries. As of facts some are completely ascertained, others only probable, and others doubtful, three divisions answering to these descriptions might be given under each head, and a fourth might perhaps be advantageously added for improbable or confuted statements, although these last might be more scientifically exhibited in the table or dictionary of the facts forming the history of opinions.

III. Dictionaries of Things. A thing, as seems to be indicated by the Latin *reor*, which apparently contains the same root as *res*, as well as by the English *think*, is properly any object of thought; and under this title may therefore be comprehended dictionaries of all other kinds, except those exclusively occupied with the explanation of words or the notation of facts. This division leaves to the third class of dictionaries all the abstract sciences, the mixed or applied sciences, the departments of criticism and the fine arts, and the whole range of metaphysical and moral speculation. It is true that some of these subjects cannot be treated of without a reference to facts; but the facts here are not viewed simply as such, but either as subordinate to principles or as modifying their operation. No very rigorous adherence to the limits of a definition however is to be expected in a dictionary of any kind, which must in all cases be a somewhat unsystematic performance, and accordingly we have few, if any, dictionaries which are exclusively dictionaries of things in the sense that has just been explained. Many of the dictionaries referred to under the last head are dictionaries of things as well as of facts: that is to say, they contain, mixed up with their statements of facts, expositions or discussions of principles. On the other hand, dictionaries of things are generally also dictionaries of facts, and sometimes lexicons, or dictionaries of words and phrases, in addition. The most important works of this description have been published under the title of Dictionaries of the Arts and Sciences, or Encyclopædias. By the word ἐγκυκλοπαιδεία, encyclopædia, the Greeks seem to have understood the whole circle of learning or of the liberal arts, or instruction therein, the term being so applied under the notion that all the departments of human knowledge were naturally connected together so as to form a sort of circle or complete system. Pliny (*Nat. Hist. Præf.*) speaks of the encyclopædia of the Greeks as an expression for the whole field of knowledge: 'Jam omnia attingenda, quæ Græci τῆς ἐγκυκλοπαιδείας vocant.' Quintilian (i. 10) defines it as the orb or complete circle of human learning: 'Orbis illa doctrinæ, quam Græci ἐγκυκλοπαιδείαν vocant.' Vitruvius (vi. Præf.) describes the encyclios or ἐγκύκλιος παιδεία of the Greeks as the discipline of all the branches of learning: 'doctrinarum omnium disciplina.' It does not appear that the term encyclopædia was ever antiently used as meaning a work treating of all the various kinds of knowledge. It has, however, as just observed, become the common title for such works in modern times. Perhaps it was first so applied by some of the Arabian writers of the middle ages, one of whom at least, Alfarabius, who flourished in the tenth century, is stated to have compiled a general treatise on the sciences, still preserved, under this title. Several such treatises with the same title appeared in Europe about the end of the sixteenth and beginning of the seventeenth centuries, the most famous of which was that of John Henry Alstedius, which was first published in 2 vols. fol. in 1630. (See preface to Supplement to Encyclopædia Britannica, and Morhoffii Polyhistor, vol. i. lib. ii. chap. 7, for an account of this and other early encyclopædias.) But none of these works were dictionaries: they were merely collections of treatises, rather resembling such works as Dodsley's Preceptor than answering to the modern notion of an encyclopædia. A much nearer resemblance to the modern encyclopædia is presented by the 'Lexicon Universale Historico-Geographico-Chronologico-Poetico-Philologicum' of Joh. Jac. Hofman, first published at Basle in 2 vols. fol., 1677, and followed by a 'Continuatio' or Supplement, of the same extent, in 1683; or, the two publications incorporated in 4 vols. fol., Lug. Bat., 1698. The form at least of this work has been generally preserved in our more recent encyclopædias and dictionaries of the arts and sciences, although most of these, by including the principles of science as well as facts, have extended their scope somewhat beyond Hofman's design. His two supplementary volumes however embody a great deal of the natural science of his time; and the work altogether contains much curious learning not readily found elsewhere. Although not evidencing any very superior sagacity, penetration, or elegance of scholarship, it is a wonderful performance for an individual, and still remains a most useful book of reference.

The first English 'universal dictionary of the arts and sciences' was the 'Lexicon Technicum' of Dr. John Harris, of which the first vol. in fol. appeared at London in 1706, and the second, completing the work, in 1710. It was afterwards extended to three volumes. Harris's Lexicon enjoyed great popularity for a considerable time after its first appearance, as may be inferred from the fact that it passed through five editions in about thirty years; and in the mathematical and physical department especially it is admitted to have been very ably executed. It was not long however before it found a rival in Chambers's Cyclopædia, the first edition of which appeared in 2 vols. fol. in 1728. [Chambers, Ephraim.] The professed peculiarity of the new work was, that it proposed to 'consider the several matters not only in themselves, but relatively, or as they respect each other; both to treat them as so many wholes, and as so many parts of some greater whole.' This was attempted to be done by a system of references from one article to another, so as to connect the subordinate particulars among themselves, and to indicate the great division of knowledge to which each belonged. In this way the work, which, in the seventh edition (1778—85), was extended to 4 vols. folio, contained no complete treatises on any of the sciences, nor other articles of any considerable length. Various other works followed, compiled upon much the same plan, among which were Barrow's 'New and Universal Dictionary of Arts and Sciences,' in one vol. fol. 1751, with a supplemental vol., published in 1754; 'A new and complete Dictionary of Arts and Sciences, by a Society of Gentlemen,' (commonly, from the name of the publisher, called Owen's Dictionary,) 4 vols. 8vo., 1754; and 'The Complete Dictionary of Arts and Sciences,' in 3 vols. fol., 1766, by the Rev. Henry Croker, Dr. Thomas Williams, and Mr. Samuel Clark. (See, for an account of all these works, the preface to the Supplement to the Encyclopædia Britannica.)

A work upon a different plan had also appeared in 2 vols. fol. in 1745, by Dr. De Coetlogon, a native of France, naturalized in England, under the title of 'An Universal History of Arts and Sciences, or a Comprehensive Illustration of all Sciences and of all Arts.' This was in fact a dictionary, the subjects being treated in alphabetical order, and Mr. Macvey Napier, in the preface just referred to, considers it to have probably suggested the Encyclopædia Britannica, the first edition of which, in 3 vols. 4to., appeared at Edinburgh in 1771. It professed to be compiled 'by a Society of Gentlemen in Scotland, upon a new plan, in which the different sciences and arts are digested into distinct treatises or systems.' This plan however had been already adopted in Dr. Coetlogon's work. The proprietor and principal compiler of the Edinburgh work was Mr. William Smellie, the printer, a man of much ability and considerable literary attainments. For the subsequent history of the Encyclopædia Britannica, which in the fourth edition completed in 1810 was extended to 20 vols., and to which a supplement in 6 vols. was added in 1824, we must refer to Mr. Napier's preface. A seventh edition of the work, in which the supplement is incorporated, is now in the course of publication. Of the other modern English Cyclopædias, already completed, the two most deserving of notice are the Cyclopædia, or a New Universal Dictionary of Arts and Sciences, conducted by the late Dr. Rees, and commonly known by his name, although professing to be only a new edition of Chambers, begun in 1802, and completed in 45 vols. 4to. in 1819; and the Edinburgh Cyclopædia, edited by Dr. (now Sir David) Brewster, begun in 1810, and completed in 36 parts, or 18 vols. 4to. in 1830. The Encyclopædia Metropolitana was begun in 1818, being announced as a Universal Dictionary of Knowledge on an original plan; comprising the twofold advantages of a philosophical and an alphabetical arrangement. This work, which is still in course of publication, is arranged in four divisions; the 1st, comprehending the Pure Sciences; the 2d, the Mixed and Applied Sciences; the 3d, the Biographical and Historical articles; and the 4th, the Miscellaneous and Lexicographical articles. The Penny Cyclopædia of the Society for the Diffusion of Useful Knowledge was begun in 1833, and has ever since been published regularly in volumes and in numbers.

Of the foreign works of this class by far the most celebrated is the Encyclopédie, or Dictionnaire Raisonné des Sciences, des Arts, et des Métiers, of Diderot and D'Alembert, of which the first vol. fol. was published at Paris in 1751; the 17th and last of the original series in 1765, 11 vols. of plates being added to the text, of which the first was published in 1762, the last in 1772. A Supplement was afterwards added, consisting of four vols. of text and one of plates, fol., 1776-7; and there is besides a 'Table Analytique' of the whole work, compiled by M. Mouchon, in 2 vols. fol., Paris and Amsterdam, 1780. Editions of the work have also been printed in France and other parts of the Continent, both in quarto and octavo. But the more detailed history of this remarkable work must be reserved for a separate article. It has been followed in France by another Dictionary of Arts and Sciences of still greater extent, the Encyclopédie Méthodique, begun in 1782 and finished in 1832, in 201 vols. 4to., including 47 vols. of plates. In this last-mentioned work every art or science is treated of in a separate volume, or series of volumes; so that the whole is in fact merely a collection of dictionaries. Of other foreign Encyclopædias we may notice the German 'Conversations Lexikon' (as it was originally entitled), projected by Mr. Brockhaus, the bookseller of Leipzig, and first published there in 1812. A seventh edition of this work appeared at Leipzig in 1827–9, under the new title of Allgemeine Deutsche Real-Encyclopädie für die gebildeten stände. An English translation of it, including much additional matter, has appeared at Philadelphia; and the American work is at present in course of republication in this country, with additions and alterations. There is also now in course of publication the great work conducted by Professors Ersch and Gruber, entitled 'Allgemeine Encyclopädie der Wissenschaften und Kunste,' which began to be published at Leipzig in 1818, and of which 46 vols. 4to. have already appeared; viz. the portion from A to Drury, in 27 vols.; that from H to Hamburg, in 12 vols; and that from O to Otzenhausen, in 7 vols. Some account of the encyclopædias in various languages, but neither very clearly nor very accurately drawn up, and mixed with a great deal of superfluous and useless matter, may be found in a little book called 'Nouveau Système Bibliographique mis en usage pour la connaissance des Encyclopédies,' &c., 12mo., Paris, 1821.

DICTUOPHYLLIA. [Madrephylliœa.]

DICTYS, a Cretan who accompanied Idomeneus to the siege of Troy, and the reputed author of a history of the Trojan war, of which a Latin prose translation is still extant. This work was discovered in the reign of Nero, in a tomb near Gnossus, which was laid open by an earthquake It was written in Phœnician characters, and translated into

Greek by one Eufraxidas, or Praxis, at the command of Nero: this translation has not come down to us: the Latin version which we possess is attributed to Quintus Septimius, who lived in the third or fourth century A.D., and contains the first five books, with an abridgment of the remainder. The best edition is that by Perizonius (1702, 8vo.), to whose preliminary dissertation the reader is referred for further particulars respecting the historian and his translator.

DIDE'LPHIDÆ. [MARSUPIALIA.]

DIDERMUM. [SYNOICUM.]

DIDERO'T, DENYS, was born at Langres in the province of Champagne, in 1713. His father, a master cutler, a worthy man, much respected in his native town, and comfortable in his circumstances, placed his son first in the Jesuits' College at Langres, and afterwards sent him to the College d'Harcourt at Paris to continue his studies. At one time young Diderot was intended for the church, but as he felt no inclination for the clerical profession, his father did not press the point. Diderot made some progress in the antient and modern languages, and still more in mathematics. On leaving college, his father placed him as a boarder with a Paris procureur, in order that he might study the law, but Diderot had no taste for that profession; he made no progress in its study, and he employed all the time he could steal from the office-desk in reading any books that fell into his hands. After two or three years, his father stopped his board wages, desiring him either to betake himself to some profession or to return home, and he several times repeated the offer of this alternative, but to no purpose, as Diderot replied that he felt no inclination for any worldly profession; that he loved reading, was happy, and wanted nothing more. For ten years from that time he lived obscurely in Paris, on his wits as the phrase is, and often, as it may be supposed, in very promiscuous company. Literature was not then a very marketable commodity, but Diderot had a facility in writing, and he undertook anything that came in his way, advertisements, indexes, catalogues, and even sermons for the colonies, which were bespoken and paid for by a missionary. He next began translating from the English for the booksellers. He also received indirectly assistance from home. At the age of 29, he married a young woman as poor as himself, who proved to him ever after a virtuous and affectionate wife, notwithstanding his subsequent neglect of her. In his drama 'Le Père de Famille' he has drawn from life some of the incidents of his courtship and marriage. His first original work was the 'Pensées Philosophiques,' 1746, a desultory and rather common-place production, which however met with great success among the partisans of the new philosophy, as it was then called. From that time Diderot ranked as one of the most strenuous assailants of the established systems in religion and politics. He saw many unseemly parts in the social edifice, and could devise no better mode of mending them than by pulling down the whole. That the state of France under the Regent and Louis XV. was such as easily to lead an impetuous mind to such a conclusion, is made sufficiently evident by the numerous memoirs of those times. In 1749 he published the 'Lettres sur les Aveugles,' for which he was imprisoned for three months at Vincennes, where however he was very indulgently treated, and allowed to receive the visits of his friends, among whom was J. J. Rousseau, to whom it is said that Diderot suggested the idea of his first literary paradox. They afterwards quarrelled upon some foolish ground, and the squabble was not creditable to either. [ROUSSEAU.] After editing, in company with others, a Universal Medical Dictionary, Diderot formed the project of a general Cyclopædia, to supersede the French version of Chambers's work, and he found a bookseller, Lebreton, willing to undertake the publication, under the title of 'Encyclopédie, ou Dictionnaire Raisonné des Sciences, des Arts, et Métiers.' Diderot and D'Alembert were joint editors, but D'Alembert withdrew after a time, and Diderot remained sole editor. The work began to appear in 1751, and was concluded in 1765, in 17 vols. fol. besides 11 vols. of plates. The publication was stopped two or three times by the government, and the last volumes were distributed privately, though the king himself was one of the purchasers. The most amusing part of the correspondence of Voltaire and D'Alembert was carried on while D'Alembert was joint editor of the Dictionnaire, and presents a lively picture of the various difficulties with which the editors had to contend. On this celebrated compilation Diderot himself passed a severe judgment. He said, 'that he had had neither time nor the means of being particular in the choice of his contributors, among whom some were excellent, but most of the rest were very inferior; that moreover the contributors, being badly paid, worked carelessly; that, in short, it was a patchwork composed of very ill-sorted materials, some masterpieces by the side of schoolboys' performances; and that there was also considerable neglect in the arrangement of the articles, and especially in the references.' Diderot complained likewise that the publisher, Lebreton, often took upon himself to scratch out of the proof-sheets any passages which he thought might endanger him, and then filled up the gap as well as he could. Notwithstanding all these deficiencies the Dictionnaire Encyclopédique met with great success for a time, but it has been since superseded in France by the Encyclopédie Méthodique, or great French Cyclopædia.

The works of Diderot are numerous, and many of them were not published till after his death. Among those published in his lifetime are: 'Lettres sur les Sourds et Muets,' 1751; 'Pensées sur l'Interpretation de la Nature,' 1754; 'Code de la Nature,' 1755. The principal faults of his didactic compositions are obscurity in the ideas, and a declamatory style. Among his tales, 'Jacques le Fataliste' and 'Le Neveu de Rameau,' a posthumous publication, are still popular. 'Les Bijoux Indiscrets,' are a series of obscene stories, which he sold to a publisher, and gave the money to his mistress, Mad. de Puisieux. He afterwards formed a connection with Mdlle. Voland, it seems, which lasted till his death. His letters to her form the principal part of the 'Mémoires, Correspondence, et Ouvrages Inédits de Diderot,' published in 1831, 4 vols., 8vo. Diderot's notions on the sexual connection may be seen in the article 'Marriage,' in the 'Dictionnaire Encyclopédique,' as well as in several of his 'Ouvrages Inédits.' He professed a strict sense of honour, and was generous and kind, though hasty, touchy, and suspicious. An estimate of his character may be formed not from the reports of his admirers or enemies, and there were many of both, but from his own works, and especially his correspondence, and also from a well written and apparently unsophisticated memoir of his life by his daughter, Mad. de Vandeul, which is printed at the head of the unedited correspondence above mentioned. A collection of his principal works was published by his disciple Naigeon, in 15 vols., 8vo., 1798, and reprinted since in 22 vols., 8vo., Paris, 1821, with a life of the author by Naigeon himself, which however is rather a dissertation on Diderot's writings and opinions than a real biography. His last work, a life of Seneca, of which he published a second edition enlarged, in 2 vols., under the title of 'Essai sur les Règnes de Claude et de Néron,' is considered by some one of his best compositions. It has been said of him that there are many good passages in all his works, though he never wrote a single entirely good work. Marmontel, Garat, and others of his contemporaries preferred his conversation greatly to his writings.

Diderot had not grown rich by his literary labours; he was getting old, and he thought of selling his library. Catherine of Russia hearing of his intention, purchased it at its full value, and moreover settled upon him a handsome pension as librarian to keep it for her, of which pension she paid him fifty years in advance in ready money. Full of gratitude, Diderot resolved to go and thank his benefactress in person. He went first to Holland, where he spent some months, and thence to Petersburg. He was delighted with his reception by the empress, and wrote to Mdlle. Voland that 'while in a country called the land of freemen (meaning probably Holland) he felt as a slave; but now in a country called the country of slaves, he felt like a freeman.' (*Correspondance Inédite*, vol. iii., lettre 138.) After a short stay at Petersburg, he returned to Paris, where the empress hired a splendid suite of apartments for him in the Rue Richelieu. 'He enjoyed his new lodgings only twelve days: he was delighted with them; having always lodged in a garret, he thought himself in a palace. But his body became weaker every day, although his head was not at all affected, and he was quite conscious that his end was approaching. The evening before his death he conversed with his friends upon philosophy, and the various means of attaining it. "The first step towards philosophy," said he, "is incredulity." This remark is the last which I heard him make.'—(*Memoir of Diderot*, by his Daughter.) Next day, 30th July, 1784, he got up, sat down to dinner with his wife, and afterwards expired without a struggle. Diderot was one of the principal members of the Holbach coterie, and the leader of that knot of literary men known in the last century by the name of Encyclopédistes. There are many particulars concerning Diderot in his friend Grimm's *Correspondance Littéraire*, Paris, 1812.

DIDIUS JULIA'NUS, of a family originally from Milan, and grandson of Salvius Julianus, a celebrated jurist, was born about A.D. 133. He was educated by Domitia Lucilla, the mother of Marcus Aurelius. He soon rose to important offices, was successively Quæstor, Prætor, and Governor of Belgic Gaul, and having defeated the Chauci, he obtained the Consulship. He was afterwards sent as governor to Dalmatia, and next to Germania Inferior. Under Commodus, he was governor of Bithynia: on his return to Rome, he lived in luxury and debauchery, being enormously rich. After the murder of Pertinax, A.D. 193, the Prætorians having put up the empire to auction, Didius proceeded to their camp, and bid against Sulpicianus, the father-in-law of Pertinax, who was trying to make his own bargain with the soldiers. Didius having bid highest, was proclaimed, and was taken by the soldiers into Rome. The Senate with its usual servility acknowledged him emperor, but the people openly showed their dissatisfaction, and loaded him with abuse and imprecations in the Circus when he assisted at the solemn games which were customary on the occasion of a new reign. He is said to have borne the insult with patience, and to have behaved altogether with great moderation during his short reign. Three generals at the head of their respective legions, Pescennius Niger, who commanded in the East, Septimius Severus in Illyricum, and Claudius Albinus in Britain, refused to acknowledge the nomination of the Prætorians. Severus being proclaimed Augustus by his troops, marched upon Rome, and found no opposition on the road, as the towns and garrisons all declared for him. The Prætorians themselves forsook Didius, and the Senate readily pronounced his abdication, and proclaimed Severus emperor. A party of soldiers making their way into the palace, and disregarding the entreaties of Didius, who offered to renounce the empire, cut off his head. He had reigned only sixty-six days. Severus soon after entered Rome, put to death the murderers of Pertinax, disarmed the Prætorians, and banished them from the city. (Spartianus in *Historia Augusta;* Dion, *Epitome*, B. 73.)

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Coin of Didius.
British Museum. Actual Size. Copper. Weight, 355 grains.

DIDO. [ÆNEAS; CARTHAGE.]

DIDUS. [DODO.]

DI'DYMUS, a celebrated grammarian, the son of a seller of fish at Alexandria, was born in the consulship of Antony and Cicero, B.C. 63 (Suidas, sub v.), and lived in the reign of Augustus. Macrobius calls him the greatest grammarian of his own or any other time. (Saturn. v. 22.) According to Athenæus (iv. p. 139, C.) he published 3,500 volumes, and had written so much that he was called the forgetter of books (βιϐλιολάθας), for he often forgot what he had written himself; and also the man with bowels of brass (χαλκέντερος), from his unwearied industry. To judge from the specimens of his writings given by Athenæus, we need not much regret the loss of them. His criticisms were of the Aristarchian school (Suid.): he wrote, among other things, an explanation of the Agamemnon of Ion (Athen. xi. p. 418 D.), and also of the plays of Phrynichus; (Id. ix. p. 371 F.) several treatises against Juba, king of Libya (Suid. 'Ιόϐας), a book on the corruption of diction (Athenæus, ix. p. 368 B.), a history of the city Cabessus (Steph. Byz. sub v. 'Αγάθυρσοι), besides essays on the country of Homer, the mother of Æneas, and other equally unimportant subjects. The *Scholia Minora* on Homer have been attributed to him, but wrongly, for Didymus himself is quoted in these notes. The collection of proverbs extant under the name of Zenobius was partly taken from a previous collection made by Didymus, and about sixty fragments of his fifteen books on agriculture are preserved in the collection of Cassianus Bassus. [GEOPONIKA.]

Suidas mentions several other authors of this name, and among them one surnamed Ateius, who was an academic philosopher, and wrote a treatise in two books on the solutions of probabilities and sophisms. We may also mention Didymus 'the blind,' an Alexandrian father of the church, who was born about the year 308 B.C., and was the teacher of St. Jerome, St. Isidore, Rufinus, and others. He died in B.C. 395. Of his numerous writings, four treatises have come down to us. I. 'On the Holy Spirit.' II. 'On the Trinity.' III. 'Against the Manicheans.' IV. 'On the Canonical Epistles.' A Greek Treatise on Farriery by another Didymus is also extant.

DIDYNA'MIA, the fourteenth class of the Linnæan system of arranging plants. It is the same as Tetrandria; that is, it has always four stamens, only two of them are a little longer than the other two. Under this class are comprehended a large part of the Lamiaceous, Verbenaceous, Scrophalariaceous, Bignoniaceous, and Acanthaceous plants of modern botanists. It is divided into two orders, Gymnospermia and Angiospermia. Gymnospermia includes the genera whose ovary is split into four small seed-like lobes, which in the time of Linnæus were taken for naked seeds; and Angiospermia those which have manifestly the seeds inclosed in a pericarp of some sort.

DIE. [DRÔME.]

DIE' or DIEY, ST., an episcopal town of France, in the department of Vosges, on the river Meurthe, not far from its source, and on a road to Schelesteed and Colmar, which branches off from the great Paris and Strasburg road at Luneville. It is 252 miles from Paris; in 48° 17′ N. lat., and 6° 56′ E. long.

This town is of considerable antiquity: it had in the seventh century an abbey called the Abbey of Jointure: this abbey was secularized in the tenth century: the chief of the college of priests thus formed bore the title of *grand prevôt*, and exercised the functions of a bishop: he was also, in conjunction with the chapter, which consisted of twenty-four prebendaries, including three dignitaries, lord of the town. The list of the *grands prevôts* included one pope, nine princes of the house of Lorraine, and several other illustrious persons. St. Dié was walled in in the thirteenth century; the walls yet remain. It is situated at the foot of a mountain, and is small, but regularly laid out, and handsome. In the middle of the last century it suffered much from a fire, which consumed many of the houses. The population in 1832 amounted to 5560 for the town itself, or 7707 for the whole commune. The inhabitants are engaged in the manufacture of cotton yarn, printed calicos, and handkerchiefs, cotton counterpanes, flannels, and hosiery, and leather; and the bleaching of linen is carried on. There are two mineral springs near St. Dié; one impregnated with sulphur, the other with iron.

The bishopric of St. Dié was established in 1777: the diocese now comprehends the department of Vosges (population, in 1832, 397,987): the bishop is a suffragan of the archbishop of Besançon. St. Dié is the capital of an arrondissement, which had, in 1832, a population of 107,804. The inhabitants of this arrondissement are much engaged in the manufacture of sabots (wooden shoes) and other wooden wares, and of cotton yarn. They make also the best cheese of any in the Vosges.

DIEMEN'S LAND, VAN. [TASMANIA.]

DIEPPE, a town in France, on the coast of the Manche or English channel, at the mouth of a small river formed by the junction of the three streams, the Argues, the Bethaune, and the Eaulne; 92 miles in a direct line north-west of Paris, or 117 miles by the road through Meulan, Mantes, Vernon, Pont de l'Arche, and Rouen; in 49° 56′ N. lat., and 1° 3′ E. long.

In the ninth century the site of Dieppe was occupied only by a few fishermen's huts; in the eleventh century it had increased to a small town, under the name of Bertheville. Henry II., king of England and duke of Normandy, erected, in 1188, a castle at Dieppe, which was demolished by his son Richard I. In the sixteenth century the fisheries, and especially the herring fishery, furnished its inhabitants with their chief occupation and wealth: their vessels went as far north as Schonen, in Sweden, to take the fish, which, after curing, they exported to the Mediterranean in their own vessels, called 'druggers,' because they brought back from the Levant spices and drugs. In the middle of the sixteenth century the Dieppois undertook the expedition in which Canada was discovered, and in 1637 they formed the first French settlements on the banks of the Senegal. In 1694 the town was bombarded by the English, and, with the exception of the antient church, nearly destroyed.

The coast at Dieppe runs north-east and south-west, and the town extends about a mile along it, having the harbour at the north-east end, and the present castle near the south-west. The town was regularly rebuilt after the bombardment of 1694: the streets are tolerably wide, paved with round stones, without foot pavement, and the houses picturesque, built of brick and stone, with high slanting roofs. There are six *places* or squares and two churches, St. Jacques and St. Remy. The church of St. Jacques is of Gothic architecture, and was, for the most part, rebuilt in the 14th or 15th century; the architecture is richly ornamented, but not in the best taste. There are at Dieppe a theatre, assembly-rooms, and promenades; nearly seventy fountains adorn the streets, which are supplied by an aqueduct three miles long. The present castle is an irregular pile of considerable extent: when Expilly wrote (1763) it was furnished with artillery, and commanded the town and the roadstead: the town walls are yet standing, but Dieppe is not a place of strength. The port is sufficiently large and secure, but the entrance is narrow, and subject to be obstructed by the accumulation of sand. The entrance to the port is formed by two piers: vessels of more than 400 tons cannot enter. There is on the quay a crucifix, said to be the largest in France, and a light-house.

The population of Dieppe in 1832 was 16,016; but it has declined of late years; for Expilly (A.D. 1763) estimated it at 21,000, including that of the suburb of Pollet, to the east of the town. The men are chiefly engaged in fishing and navigation. In August the herring fishery is carried on upon the English coast and in the North Sea, and employs 60 to 80 vessels of 25 to 30 tons, and about 900 to 1200 men: in October it is carried on in 120 to 130 smaller vessels on the French coast: the fish caught in the August fishery are salted: those caught in the October fishery, which are of smaller size, are sent to Paris and the provinces to be eaten fresh. The mackerel fishery is carried on in decked boats of 20 to 50 tons, each manned with from 12 to 20 men, chiefly on the coast of Picardie. The vessels employed in the Newfoundland and other cod fishery are from 100 to 150 tons. The fisheries of Dieppe are not half so valuable as they were fifty years ago. Besides the persons actually engaged in them, these fisheries give employment to others engaged in boat-building, rope and sail making, and cooperage. Oysters are dredged on the banks opposite Dieppe, and there are beds in which the oysters of Granville and Cancale and Marennes, near Rochelle, are deposited. Lace-making was formerly carried on to a considerable extent; but this branch of manufacture has much declined. Trinkets in gold, horn, and ivory, are made, and pendulum clocks, at St. Nicolas, a village near the town. Dieppe has of late years risen into some repute as a bathing place. It has a high school and a royal school of navigation. Richard Simon, one of the Pères de l'Oratoire, and an eminent Hebraist and biblical critic, his nephew, Antoine Bruzen de la Martinière, compiler of 'Le Grand Dictionnaire Géographique Historique,' &c., and the celebrated French Admiral Du Quesne, were natives of Dieppe. (Dibdin's *Tour in France and Germany*; Mrs. Stothard's *Tour through Normandy*; Balbi; Malte Brun; Expilly.)

Dieppe is the capital of an arrondissement which contained, in 1832, 109,978 inhabitants.

DIERVILLA, a genus of Caprifoliaceous plants, consisting of a single North American species, by Linnæus considered a honeysuckle, and called Lonicera Diervilla. It is however obviously not of that genus, because its fruit is a dry capsule with a papery pericarp, with four cells and several seeds.

D. Tournefortí, or, as it is also called, *D. humilis*, *lutea*, or *canadensis*, is a common hardy shrub, growing from two to three feet high, in a spreading manner, and having small funnel-shaped irregular five-cleft yellow flowers, growing in stalked clusters of two or three from the axils of opposite ovate serrated leaves. It is found wild in rocky woods in the United States, from Canada to Carolina, flowering in June.

DI'ESIS, in antient music (δίεσις, *division*). The Greeks divided a tone into a major and minor semitone; the greater was called an apotome [APOTOME], the lesser a limma, or Diesis: to the difference between the two the name of comma [COMMA] was given. But it must here, once for all, be observed, that the Greek writers, if we really enter into their meaning, differ much in their definitions of musical intervals, and that the moderns are no less at variance in their interpretation of many antient terms of the art.

DIET. [FOOD.]

DIFFAREATION. [MARRIAGE.]

DIFFERENCE, the excess of one quantity over another. This fundamental meaning of the term is almost lost in the higher parts of mathematics, from the association of it with a methodized theory, derived from the consideration of the differences presented by successive quantities which follow a regular law. It is therefore a very wide branch of pure mathematics which must be considered under this term, namely, the method or calculus of differences. And the connection of this subject with the differential calculus (the results of the latter being, in one point of view, particular cases of the former) renders it impossible to treat of the two with that perfect separation which the alphabetical arrangement of a work like the present requires. Following the plan which we have laid down in other articles, we shall here describe the most important results connected with the term in question, referring for information on other matters to the following articles:—INTEGRATION, FINITE; GENERATING FUNCTIONS, THEORY OF; EXPONENTS, NOTATION OF; SYMBOLS OF OPERATION AND QUANTITY, SEPARATION OF; EQUATIONS OF DIFFERENCES; INTERPOLATION.

If we carry the hand along a sheet of paper, laying down points with a pen at various intervals, we get a number of points, through which an infinite number of curves may be made to pass: but generally speaking, there is one which is more simple than all the rest. If we also assign various numbers, we may conceive them all to be values of some function of a variable x, answering to $x = 1$, $x = 2$, &c. Thus we may ask the following question· what is that function of x of which 43, 47, 53, 61, 71, 83, &c., are the values, when x is successively made equal to 1, 2, 3, 4, 5, 6, &c.? This problem is indeterminate, with respect to common algebra merely, unless we can ascertain a law by which the series can be continued *ad infinitum*, and which it is allowable to assume: it then becomes determinate with respect to the expressions of common algebra only, but is again indeterminate if we are allowed to assume the transcendental expressions of trigonometry or the integral calculus. Confining ourselves to the expressions of common algebra, we may detect any law which prevails throughout the whole series by taking the difference between each term and the next, and thus forming a new series; and then by repeating this process again and again until the series so formed presents an easily perceptible law. Thus in the preceding case we have

Given series	43		47		53		61		71		83 ...
Series of First differences		4		6		8		10		12	
Series of Second differences			2		2		2		2		

We now see, that irregular as the first series may appear, the successive differences of the successive differences of its terms are always the same, and we may thus extend the series further. Thus we have—

83 97 113 131 151 173, &c.
12 14 16 18 20 22, &c.
2 2 2 2 2 2, &c.

But still this question remains; assuming the preceding law of continuation, and also that we have thus the values of some function of x answering to $x=1$ (namely, 43), $x=2$ (47), &c. What is the value of the function answering to fractional values of x, for instance when $x=2\frac{1}{2}$? Considering that $x=2$, gives 97, and $x=3$ gives 113, it might seem at first sight that $x=2\frac{1}{2}$ should give 105. But a moment's consideration will show that this can only be in the series

81 97 113 129, &c.,

and that the irregularity of the progression from term to term will require a law to express it, such as will not allow of uniform progression between the terms. Such are the notions which might be made to suggest themselves, and the difficulties of which find their answers in the mathematical consideration of the subject.

Let any term chosen at pleasure in a series be called a, let the next term be a_1, the next a_2, and so on. That is, a_n means the nth term from a, not reckoning a. The succession of *first differences* (a more convenient way of expressing the *first succession* of differences) is—

$$a_1-a,\quad a_2-a_1,\quad a_3-a_2,\quad a_4-a_3\ \ldots\ldots$$

The succession of *second differences* (*second succession* of differences) is—

$$a_2-a_1-(a_1-a),\ \text{or}\ a_2-2a_1+a$$
$$a_3-a_2-(a_2-a_1),\ \text{or}\ a_3-2a_2+a_1,\ \text{\&c.}$$

The succession of third differences, similarly derived from the preceding, is—

$$a_3-3a_2+3a_1-a,$$
$$a_4-3a_3+3a_2-a_1,\ \text{\&c.}$$

From which it will be evident to any one who knows the binomial theorem and the law of its co-efficients, that the first term of the nth succession of differences is—

$$a_n-n\,a_{n-1}+n\frac{n-1}{2}a_{n-2}-\ .\quad .\ .\ (n+1\ \text{terms}).$$

It is usual to denote this by $\Delta^n a$, the letter Δ standing for the operation of taking the difference, the exponent expressing that this operation has been repeated until it has been performed n times, and a being the term of the series used in the first operation. The symbol is called the nth difference of a.

If, then, we write the series and its successions of differences, not using the results of the operations, but their symbols, we have as follows—

$$\begin{array}{cccccc}
a & a_1 & a_2 & a_3 & a_4 & \ldots\ldots \\
\Delta a & \Delta a_1 & \Delta a_2 & \Delta a_3 & \ldots\ldots & \\
\Delta^2 a & \Delta^2 a_1 & \Delta^2 a_2 & \ldots\ldots & & \\
\Delta^3 a & \Delta^3 a_1 & \ldots\ \ldots & & & \\
\text{\&c.} & & & & &
\end{array}$$

From which we find that $a_1=a+\Delta a$.

$$\begin{aligned}
a_2&=a_1+\Delta a_1=a+\Delta a+(\Delta a+\Delta^2 a)\\
&=a+2\Delta a+\Delta^2 a\\
a_3&=a_1+2\Delta a_1+\Delta^2 a_1=a+\Delta a\\
&\qquad+2\,(\Delta a+\Delta^2 a)\\
&\qquad+\Delta^2 a+\Delta^3 a
\end{aligned}$$

or, $a_3=a+3\Delta a+3\Delta^2 a+\Delta^3 a$.

Proceeding in this manner, and by the assistance of the binomial theorem as before, we find that—

$$a_n=a+n\,\Delta a+n\frac{n-1}{2}\Delta^2 a+\ldots\ldots\ (n+1\ \text{terms}).$$

These two theorems are the fundamental parts of the whole theory of differences: and our limits will not allow us to go further into the subject. We shall only observe, that it is most desirable that this very elementary branch of pure mathematics should be taught as a part of common algebra, or at least with the first rudiments of the differential calculus. The almost universal practice of deferring this subject until the student is master of the integral calculus, is entirely subversive of all natural order, and is perhaps one of the reasons why the differential calculus is proverbially difficult. Various developments and applications are to be found in every work on the subject.

The term difference is continental; the older English term was *increment*.

DIFFERENCE, ASCENSIONAL. [ASCENSION.]

DIFFERENTIAL CALCULUS, the name given by Leibnitz to the science which was digested nearly about the same time by himself and Newton, independently of each other [FLUXIONS, COMMERCIUM EPISTOLICUM], and which has of late years almost exclusively prevailed in this country, to the exclusion of the name, notation, and (so far as they differ) methods of Newton's fluxions.

It is impossible, in the smallest degree, to exhibit the present state and uses of a science into which all others merge as the student approaches the higher applications of mathematics. The article DIFFERENTIAL COEFFICIENT will, so far as it goes, gives some idea of the nature of its first step; but the following remarks must be considered as intended for the student who has made some progress in a modern elementary work.

The history of the differential calculus, at its first rise, is so connected with that of the Newtonian FLUXIONS, in consequence of the celebrated dispute as to the right of invention, that we have thought it best to refer the whole point to the last-named article. On the history of the science since the time of Newton, there is no work from which we can trace out a connected account of the various steps by which the present system has been formed. In fact, most of the new investigations have been made with reference to some particular points of physical science. It would be very difficult to write the history of this calculus without entering at the same time into that of mechanics, optics, astronomy, &c. &c., and of every subject to which it has ever been applied. An attempt at the former without the latter would be an account of the progress of language without mention of literature, oratory, or the drama.

In the meanwhile, seeing that notions as to the most proper and useful basis on which to build this science are far from being fixed, the most advantageous course which we can here adopt is to give a short account of the various systems which have been proposed, referring to such articles and treatises as will enable the student to obtain further information. These different systems all produce the same results, expressed in very similar manners: there is no question between them as to the truth or falsehood of any one deduction, and a practised intellect can always see how the principles of any one, *assumed as granted*, may be made to furnish demonstration of those of any other. It is therefore, with some exception, a metaphysical rather than a mathematical difference which agitates (or rather which did agitate) the mathematical world. We do not mean to say that opinions are now agreed; but it seems that the question is left open, it being admitted that the manner in which a student arrives at his knowledge of the subject in the first instance is not of the greatest importance, provided that, when it has been obtained, he give his attention to the comparison of the various methods by which he might have attained the same end.

The precursors of Newton and Leibnitz, namely, Archimedes, Cavalieri, Wallis, Barrow, Fermat, Roberval, and others, touched so near upon the differential calculus, that it is obvious any of them might have taken the place of either of the first, if they had possessed more powerful means of algebraical development. After Vieta, Descartes, Wallis, and Newton (considered only as the discoverer of the binomial theorem), the step to a formal calculus was comparatively small. The essential part of the difficulty had been removed, and by much the greater part of the distance between Archimedes and Leibnitz had been gained. This point once attained, *methods* sprung up with rapidity, and in little more than a century we find the introduction of the various schemes which it will be necessary to mention, namely—Leibnitz's method of infinitesimals; Newton's method of prime and ultimate ratios; Newton's method of fluxions; Landen's method of vanishing fractions, or residual analysis; D'Alembert's method of limits; Lagrange's method of derivation.

Many other forms have been proposed, which either coincide in principle with one or other of the preceding, or are without any independent claim to notice. Several of the preceding, indeed, are more distinguished from each other by historical notoriety than by essential difference of character. If we distinguish carefully between the first principles of a method and the manner in which those principles are applied to algebra, it would not be any great stretch of assertion to contend that all the methods except the last are different ways of expressing the same fundamental ideas; and that the last (Lagrange's) is a proof that, so long as the preceding methods employed the usual amount of algebraical assumption in the establishment of the connection between themselves and algebra, that same quantity of assumption would have been sufficient for the basis of a purely algebraical science, equivalent to the differential calculus.

The method of Leibnitz assumes that quantities are made up of infinite numbers of infinitely small parts. [Infinitesimal Calculus, Infinite.] It is a sort of atomic theory of pure magnitude, which is most obviously either false or obscure; for so far as infinitely small quantities can be definitely explained, it is obvious that there are no such things; and any obscurity left in their definition extends itself throughout the whole science. But the falsehood of the supposition is not absolute; for though magnitudes cannot be distinctly laid down to be composed of an *infinite* number of *infinitely small* parts, yet any magnitude can be divided into a number of parts *greater than any we may happen to name*, each of which parts shall be *less than any magnitude we may happen to name*. Thus it is perfectly obvious that a foot may be divided into parts more than a million in number, each of which shall be less than the hundred millionth part of an inch. If we may use such a phrase, the falsehood of the assertion may be made of as small an intensity as we please, and the consequence is, that its results turn out absolutely correct. All the difficulties of the science are concentrated into one single assertion; and when this assertion is once fairly understood and received in a correct sense, all that follows is more easily understood and remembered, and far more easily applied, than the results of any other method. Whichever of the systems a student pursues, it is our decided opinion that he should accustom himself to translate every result into the language of the infinitesimal calculus, and endeavour to demonstrate it by the methods of the same. It is usual to give a chapter on this method in elementary works; in addition to which we should strongly recommend to the student of principles, Carnot, 'Réflexions sur la Metaphysique du Calcul Infinitesimal,' Paris, 1813: a work which has been translated into English. But it must be understood not to recommend the peculiar method of explaining the difficulties of infinitesimals adopted in this work, but only the manner of stating the points of difficulty, and the comparison of the different systems.

The system of Newton, known by the name of prime and ultimate ratios, was set forth in the first section of the Principia, and is the method pursued throughout that work. It is in reality a method of limits, exhibited in a form which allows of a more ready application to geometry than to algebra, and accordingly it is abandoned by Newton himself in the method of fluxions. Instead of considering and comparing simultaneous increments of infinitely small magnitude, the ratios of small but finite increments are taken; and not these exactly, but the limits towards which they approach when the increments are diminished, which are called *ultimate* ratios, or *nascent* ratios, according as the increments are supposed to be *in the act* of growing from or diminishing towards nothing. The expression of Newton will justify us in using the three words in Italics: 'Objectio est, quod quantitatum evanescentium nulla sit ultima proportio: quippe quæ, antequam evanuerunt, non est ultima; ubi evanuerunt, nulla est.....Similiter per ultimam rationem quantitatum evanescentium, intelligendam esse rationem quantitatum, *non antequam evanescunt, non postea, sed quâcum evanescunt*. Pariter et ratio prima nascentium est ratio quâcum nascuntur?' The student must seek for the account of this method in the first section of the Principia already cited, and in the article Ratios, Prime and Ultimate. It may be observed that in illustrating the preceding answer, Newton appeals to the fundamental considerations on which his other method (if it be really another method) is founded, to which we now come.

The method of fluxions was also given by Newton, and with a peculiar notation, which maintained its ground in this country until about the year 1816. [Fluxions.] It will be seen in the articles Direction, Velocity, Force, &c. that there are many fundamental ideas, connected with sensible objects, which lead to a practical differential calculus, and might have happened to have been the means of suggesting a strict and mathematical theory. Newton adopted one of these, that of velocity, of which it may be said that its assumption as an answer to objections is a formal evasion of all the metaphysical difficulties of the subject. Since the proportions of all quantities may be represented by those of straight lines, the nature of the comparative changes which take place in continuously increasing or decreasing quantities may be referred to the velocities with which the terminal points of straight lines change their places. Velocity once clearly defined, in cases where it is variable, there is no further difficulty; but unfortunately a distinct conception of the measure of velocity is precisely equivalent to finding a meaning for the differential or fluxional coefficient independently of it. The theory of fluxions is best exhibited in the work of Maclaurin, 'Treatise on Fluxions,' 2 vols. 4to., Edinburgh, 1742, which, for rigorous and consistent application of its own principles, has, in our opinion, never been surpassed. It has the advantage of having been written in answer to acute objections of principle [Berkeley], and is *the* work on fluxions.

The method of limits of D'Alembert, which is now more frequently used than any other, was considered by the author himself as an explanation of Newton's prime and ultimate ratios. It is usual to attribute the exposition of this method to D'Alembert (and, considered as a formal application of limits, correctly), though several, previously to him, had made special applications of the principle. The articles in the Encyclopædia must be considered as the *pièces justificatives*. The following article, Differential Coefficient, will explain this method, which contains the point in which the principles of all the preceding unite, and which must more or less be all. See also the article Limit.

The two remaining methods (those of Landen and Lagrange) are attempts to establish the science upon purely algebraical principles. Previously to entering upon them, we must remark that none of the preceding theorists attempted to make his system furnish any additional security to the methods of the algebra already in use. Such as it was, correct or incorrect, clear or obscure, no one gave a moment's consideration to the fact that algebra already contained difficulties of precisely the same character as those which were matter of dispute in the differential calculus. Taking it for granted that algebra stood already upon as firm a basis in every part as the differential calculus could ever, on any supposition, be expected to do, it was a matter of some interest to make the latter a pure extension of the former.

The residual analysis of Landen is a technically algebraical exhibition of the theory of prime and ultimate ratios. The tract in which it was promulgated, 'The residual Analysis, a new Branch of the Algebraic Art, &c' appeared in 1764. When it is considered that this *new* branch of the algebraic art was only old fluxions in a different dress, the title may excite surprise, if we remember how well Landen deserved his reputation. But it must be remembered that all the discussion of which this article is meant to elucidate the history, arose from a tendency to consider two methods as *mathematically* different, which were not the same in the method of enunciating their first principles. A something between Landen and D'Alembert, as to principle, published in 1748, was called the 'Doctrine of Ultimators, containing a new Acquisition, &c., or a Discovery of the true and genuine Foundation of what has hitherto mistakenly prevailed under the improper names of Fluxions and the Differential Calculus.' The difference between Landen and Newton will appear in the article Fractions, Vanishing, and in the instances which we shall presently give. It is the limit of D'Alembert supposed to be *attained*, instead of being a *terminus* which can be attained as nearly as we please. A little difference of algebraical suppositions makes a fallacious difference of form; and though the residual analysis draws less upon the disputable part of algebra than the method of Lagrange, the sole reason of this is that the former does not go so far into the subject as the latter.

The method of Lagrange, first given in the public lectures at the *Ecole Normale*, and afterwards published separately under the title, *Théorie des Fonctions*, is a deduction of the whole science from Taylor's Theorem, which being absolutely granted, undoubtedly all the rest may be made to follow. If $\phi\,(x+h)$ can be always expanded in a form of which the two first terms are $\phi x + \phi' x.\,h$, and if $\phi'\,(x+h)$ be related in the same manner to $\phi' x + \phi'' x.\,h$, and $\phi''\,(x+h)$ to $\phi'' x + \phi''' x.\,h$, and so on, it can be made to follow that

$$\phi\,(x+h) = \phi x + \phi' x.\,h + \phi'' x.\,\frac{h^2}{2} + \phi''' x.\,\frac{h^3}{2.3} + \&c$$

upon principles as sound as those of algebra in the hands of Maclaurin, or Euler, or Clairaut, as elementary writers. It is our opinion that Lagrange has not been correctly understood, nor fairly dealt with, by those who have compared his theory of functions with the other methods. Undoubtedly any one who should maintain the unqualified admissibility of Lagrange's work must assert both the major and minor of the following syllogism.

Algebraical expansion (*théorie des suites* is Lagrange's phrase) as generally received A.D. 1790, was founded on sound principles: the *Théorie des Fonctions* is a logical and incontestable result of such algebra; therefore, &c.

All the attacks upon Lagrange have denied the major of this syllogism, whereas it appears to us that he never intended to assert more than the minor. Perceiving that the mathematical world was in the habit of calling in the aid of limits or infinitesimals, to help *a certain algebra* in deducing certain conclusions, he showed them how that very algebra, good or bad, was competent to the deduction of the same conclusions without either limits or infinitesimals; and he was correct. Notwithstanding any thing in the work in question, Lagrange might have admitted all that we shall find it necessary to say against his system, absolutely considered, in the article FUNCTIONS, THEORY OF.

A new question has arisen of late years, namely, whether the theory of limits be not absolutely necessary to the rigorous development of common algebraical forms, and whether this same theory of limits may not be applied to the establishment of the differential calculus, independently of any expansion. A tract of M. Ampère (as we believe), entitled 'Précis du Calcul Differentiel, &c.,' is the earliest writing we are acquainted with in which this is attempted to be done. A treatise on the subject, in process of publication by the Society for the Diffusion of Useful Knowledge, professes to have the same end in view. The work of M. Cauchy has much in it by which this object is promoted, but expansion is avowedly introduced.

We shall now state two propositions, one geometrical, the other algebraical, in the words of the several systems.

Infinitesimals.—An infinitely small arc of a circle is equal to its chord.

Prime and ultimate Ratios.—If an arc of a circle diminish, the ultimate ratio which it bears to its chord is one of equality; or, if it begin to increase from nothing, the prime or nascent ratio of the arc and chord is that of equality. Or the arc is *ultimately* equal to its chord.

Fluxions.—If an arc increase from nothing with a uniform velocity, the velocity with which the chord increases is, at the first moment, equal to that of the arc.

Limits.—If the arc of a circle (and therefore its chord) diminish without limit, the limit of the ratio of the arc to the chord is one of equality.

Residual Analysis.—When the arc of a circle = 0 $\frac{\text{arc}}{\text{chord}} = \frac{0}{0} = 1$, which is ascertained by clearing the numerator and denominator of a factor which vanishes when arc = 0.

Theory of Functions.—When the arc is expanded in the following series,

$$\text{Arc} = \text{A} \times \text{chord} + \text{B} \times (\text{chord})^2 + \&c.$$

then A = 1.

Infinitesimals.—If an infinitely small increment dx be given to x, then x^3 receives the infinitely small increment $3x^2dx$.

Prime and Ultimate Ratios.—The ratio which any increment given to x bears to the consequent increment of x^3 is ultimately that of 1 to $3\,x^2$.

Fluxions.—If x be a line which increases with a velocity $\dot{x}$, then x^3 increases with the velocity $3\,x^2\,\dot{x}$.

Limits.—The limit of the ratio obtained by dividing an increment of x^3 by the increment of x which produced it, on the supposition that the latter increment diminishes without limit, is $3\,x^2$.

Residual Analysis.—Since

$$\frac{y^3 - x^3}{y - x} = x^2 + xy + y^2$$

it follows that when $y = x$ $\quad \frac{x^3 - x^3}{x - x} = 3\,x^2$.

Theory of Functions.—If $(x + h)^3$ be expanded in a series of powers of h, the coefficient of the first power of h is $3\,x^2$.

DIFFERENTIAL COEFFICIENT. The expressions to which this term is applied are of a degree of importance in the science to which they belong, as great as that of the letters of the alphabet in writing. Without entering into the method of using them, which would be in effect to write a treatise on the differential calculus, we shall make some remarks on the manner of defining and understanding the term.

When two magnitudes are so related that either being given the other is also given, it follows that any change being made in the one, the consequent change in the value of the other can be found, and the two changes can be compared as to magnitude. By this means a rough notion can be formed as to the effect which a change of value in one produces in the other. In such articles as CURVATURE, DIRECTION, VELOCITY, FORCE, &c., it is sufficiently shown that this rough notion, obtained by making a sensible change in one magnitude and comparing it with that produced in another, though sufficient for practical purposes, does not afford any exact and mathematical measure of the thing sought for. In each of the articles cited, it is found necessary to diminish the change originally supposed without limit, and it is not the actual ratio of two changes which we have to consider, but the limit to which that ratio approximates as the changes are diminished without limit. We must distinctly refer the student to sensible objects for an illustration of the cause why it is convenient, and even necessary, to have recourse to the *limit of a ratio*. [See also LIMIT, RATIOS (PRIME AND ULTIMATE), and various articles cited in DIFFERENTIAL CALCULUS.]

Let ϕx be a function of x, called y, which when x is changed into $x + h$, becomes $y + k$, so that

$$k = \phi\,(x + h) - \phi x.$$

Divide k by h, ascertain the limit towards which this quotient approximates when h is diminished, and that limit is what is called the differential coefficient of y with respect to x. For instance, let $y = x^2 + x$; then

$$\begin{aligned} k &= (x + h)^2 + (x + h) - (x^2 + x) \\ &= 2\,xh + h^2 + h; \end{aligned}$$

and k divided by h gives $2x + h + 1$, which, when h is diminished without limit, has for the limit of its decrease, $2x + 1$, which is therefore the differential coefficient of $x^2 + x$ with respect to x.

The term *differential coefficient* arises thus. The method of Leibnitz [INFINITESIMAL CALCULUS] proceeds as follows. Imagine x in the preceding expression to be increased by an *infinitely small quantity* (see article just cited for remarks on this phrase) which call dx, the *differential* of x. Then the resulting differential of y is

$$\begin{aligned} dy &= (x + dx)^2 + (x + dx) - (x^2 + x) \\ &= (2x + 1)\,dx + (dx)^2 \end{aligned}$$

Now $(dx)^2$ is rejected as being an infinitely small part of the preceding term, so that $(2x + 1)\,dx$ is the *differential* of $x^2 + x$. The expression $2x + 1$ (which is our preceding result) is here the *coefficient* of the *differential* dx, and when a less objectionable method of obtaining it came into use, still retained the name of differential coefficient. It were exceedingly to be wished that some shorter term could be agreed on for the expression of a result which is so often required to be named.

In the method of Leibnitz the differential coefficient is actually dy divided by dx, and it is still expressed by $\frac{dy}{dx}$ in the more modern methods. But this notation must now be supposed to be obtained as follows. Let the change of x into $x + \Delta x$ be accompanied by that of y into $y + \Delta y$; then $\frac{\Delta y}{\Delta x}$ expresses the algebraical ratio of the change of y to the change of x. In making the convention that $\frac{dy}{dx}$ is to stand for the limit of $\frac{\Delta y}{\Delta x}$, obtained from the supposition that Δx diminishes without limit, we consider the first symbol, not as that of an algebraical fraction, but as one whose *whole* has a meaning, the *parts* having none. This is the case with all *simple* symbols, as distinguished from *compound* symbols: thus in the figure V, standing for five, the two sides of the letter have no independent meaning; while in 4 + 7, each of the three symbols, 4, +, and 7, has meaning contributing to that of the whole, and at the same time independent of it. Thus though we consider $\frac{dy}{dx}$ as pointing out that it is y which has been differentiated, and with respect to x, we do not, in this symbol, assign to dy and dx any independent share of meaning.

The advantage of the notation in question is the connexion which it preserves between the practical use of the method of Leibnitz, and the theoretical accuracy of that of limits. For instance, it is strictly true, according to our conventions, that

$$\text{when } y = x^2 + x \quad , \quad \frac{dy}{dx} = 2x + 1 :$$

but, giving dy and dx separate meaning, it is *not* true that $dy = (2x + 1)\,dx$. Yet the latter equation, though never true, is of this kind, that it may be made as near to truth as we please, if dx may be made as small as we please. For the reason why it cannot therefore be said to be true in the case where $dx = 0$. [FRACTIONS, VANISHING.]

The differential coefficient of a differential coefficient is called the *second* differential coefficient; a repetition of the process gives the third differential coefficient: and so on. These, if the original method of notation were proceeded with, should be represented by

$$\frac{dy}{dx} \qquad \frac{d\left(\frac{dy}{dx}\right)}{dx} \qquad \frac{d\left(\frac{d\left(\frac{dy}{dx}\right)}{dx}\right)}{dx}, \text{ \&c.}$$

but a more convenient notation is derived as follows. Let the substitution of $x + \Delta x$ for x take place any number of times in succession, giving

$$\phi(x) \;,\; \phi(x + \Delta x) \;,\; \phi(x + 2\Delta x) \;,\; \phi(x + 3\Delta x), \text{ \&c.}$$

Form the successive differences of the first term [DIFFERENCE] ϕx or y: then the following theorem can be proved. The nth difference of y, or $\Delta^n y$, divided by the nth power of Δx, or $(\Delta x)^n$, is an expression of which the limit, made by diminishing Δx without limit, gives the same result as arises from differentiating y, n times in succession. We may therefore (subject to the remarks already made on the *first* coefficient) represent the limit of $\frac{\Delta^n y}{(\Delta x)_n}$ by $\frac{d_n y}{(dx)^n}$, so that the function y and its successive differential coefficients are denoted as follows:—

$$y \;,\; \frac{dy}{dx} \;,\; \frac{d^2 y}{dx^2} \;,\; \frac{d^3 y}{dx^3} \;,\; \frac{d^4 y}{dx^4} \;, \text{ \&c.}$$

It is usual to omit the brackets in the denominators.

DIFFERENTIAL EQUATIONS. [EQUATIONS, DIFFERENTIAL.]

DIFFERENTIAL THERMOMETER, &c. [THERMOMETER, DIFFERENTIAL, &c.]

DIFFLU'GIA. [POLYPIARIA DUBIA.]

DIFFRACTION OF LIGHT. The peculiar modifications which light undergoes when it passes by the edge of an opaque body are classed as phenomena of the *diffraction* or *inflexion* of light.

When a ray of solar light is transmitted through a very small hole in a card, or is collected in a point by means of a double convex lens, and then diverges from that point, if a small opaque plate of any outline be interposed in the course of the ray, the shadow of this object received on a parallel screen behind will be encompassed by a series of coloured bands or fringes of a similar outline with the body, except at its angular points; the order of the colours in each fringe, reckoning from the outside towards the shadow, or inside, is, as in the prismatic spectrum, from red to blue, but the intermediate colours are less distinctly isolated, partaking of a mixture of the extreme tints.

The actual shadow, or dark space within the innermost fringe, is also larger than the geometrical shadow which would have been cast if the rays had passed exactly by the edge of the body in straight lines and been received on the same screen; the space by which the actual shadow surpasses the geometrical in breadth, is independent of the linear dimensions, the form or the matter of the interposed body, and it will therefore be most sensible in very narrow bodies: hence arise the dilated shadows of hairs, threads of webs, &c. which must fall daily under every one's observation.

When the interposed body is very narrow but of sensible width, streaks alternately brighter and darker will be found *within the shadow*, and a white line along the middle, when the body is of a long and slender rectangular form.

If the incident light were homogeneous, such as pure red, blue, &c. as found in the spectrum, the colour of the fringes though differing in intensity from one another, would of course be the same as the incident, but the sun's light, and most artificial light, being compounds of several simple coloured lights, the fringes in such case are of various tints which predominate on their external or internal limits, according as they are differently subject to the causes which produce diffraction.

Sir I. Newton in his optics relates several modes in which he varied the experiments on the inflexion of light; when two perfectly straight knife-edges were made to meet at a very acute angle, the fringes formed between the shadows of the knives received on a screen at a considerable distance from them were hyperbolas, each having for asymptotes the shadow of the corresponding knife-edge and a right line perpendicular to that bisecting the acute angle and passing through the intersection of the shadows; they approached to rectangular hyperbolas as the inclination of the edges diminished, and mutually crossed without interfering, the points where they crossed being however differently placed as the screen was removed to different distances.

In his queries, he suggests an explanation that light may be subject to the action of forces sensible only at very small distances from the surfaces of bodies, that under their influence the rays in their course near the edge of the body, instead of passing straightforward, describe very sinuous paths, with many contrary flexures, and thus they are found some turned inwards towards the shadow, others outwards, forming coloured bands; the curve surface, which is the locus of the intersections of all these diffracted rays, forming the envelope of the visible shadow.

Objections have been taken to this theory, on the ground that the phenomena will vary when the positions of the object and screen being fixed, that of the luminous point is varied, and also that a force emanating from the body ought to be supposed variable with its density; these objections do not appear to the writer of this article of great weight. In the former case, the divergence of the pencil of rays within the sphere of action of the forces is altered *ab initio;* in the latter the superposition of two similar material systems of particles, though doubling the force, when effective, would leave all the points of evanescence of the force unchanged, would leave the asymptotes unchanged, and it does not at all appear necessary that it should alter any phenomena of which the limits are unvaried.

Explanations however are not wanting on the undulatory hypothesis of light, and Fresnel has with considerable simplicity, calculated the positions and breadth of the fringes merely as resulting from the propagation of the undulations of a whole wave of light, minus that portion of a wave surface subtending the same solid angle, at the origin of the wave, as the obstacle.

Dr. Young, by a very simple expedient, has converted Grimaldi's experiment relative to the light streaks within the shadow of a long rectangular body, into the basis of his very beautiful theory of interferences. Let the light at one edge of the body be altogether stopped by an intercepting body placed before or behind the rectangular one, while the light is allowed free passage as before at the other side; the streaks will notwithstanding be instantly obliterated, showing that those streaks are produced by the interference of waves passing on either side of the body, and having their length either equal or differing by a small multiple of the length of an undulation.

Many beautiful optical phenomena arising from diffraction have been produced by transmitting light through one or several small holes, or the interstices of fine wire work, and even by reflection between plane mirrors inclined at a very small angle. Persons desirous to be further acquainted with these phenomena may consult the memoirs of Young, Fresnel and Fraunhofer; some interesting facts on the same subject have also been supplied by Sir J. Herschel in his treatise on light.

DIGAMMA, or VAU, is the name given by grammarians to a letter which once belonged to the antient alphabet of the Greeks. It appears to have occupied the sixth place in that alphabet, for while *epsilon* is employed as the numerical symbol for *five*, the next letter, as that alphabet is now arranged, is the representative of *seven*. Moreover, this position of the digamma will correspond precisely with that of *vau* or *waf* of the Hebrew, and of *f* in the Latin alphabet, two letters of kindred power and form. A further argument may be found in the principles which would seem to have determined the arrangement of the Greek alphabet. [Alphabet, p. 380, col. 2.) The letter is still to be seen in many inscriptions. (Alphabet, p. 383, plate ii., Nos. 20, 21, and 26.) With regard to the power of the letter, it is now the general and well-established opinion that it is equivalent to our own *w*.

The use of the digamma prevailed more particularly in the Æolic dialect of the Greek tongue. In the other dialects it was commonly dropped, particularly the Attic; and as this became the favourite dialect of Grecian literature, the digamma at last escaped from the alphabet; and even the Homeric poems, which had been written in a dialect still possessing the digamma, were presented to the Athenians without that letter, to the serious injury of the metre. But though the form of the digamma was not admitted into the Attic alphabet, the vowel *o* was occasionally used, so as virtually to represent it, as in *οιδα, οικος, οινος*, equivalent to FIΔA, FIKOΣ, FINOΣ (comp. the Latin *video, vicus, vinum*); and it was altogether superfluous to prefix the digamma, FOIKOΣ, as was sometimes done. At other times the *upsilon* filled the place of the digamma, as in the nouns which terminate like *βασιλευς* (ΒΑΣΙΛΕFΣ.)

The Latin language, being more closely connected with the Æolic dialect of the Greek, is abundant in the use of this letter; for the true pronunciation of the *v* or *u consonans* must have been the same as our *w*, or it could not have so readily interchanged with the vowel *u*. The Greek words *ωον, εαρ, εσπερος, εστια, ιον*, appear in Latin as *ovum, vēr, vesperus, vesta, viola*. In the last instance indeed there are two other points of difference, the Latin word being feminine, like *rosa* compared with the Greek *ῥοδον*; and secondly, a diminutive, which is well suited to the size of the flower. Sometimes a *b* appears in the Latin word, where the Æolic Greek must have had the digamma, as *probus* compared with *πραϋς*; or an *f*, as *Formiae* compared with *Ormiae*.

The disappearance of the digamma in one dialect and its retention in another is in perfect accordance with what is seen in modern languages. In our own we have ceased to pronounce the *w* in *who, whose, two, sword, answer, whole*; while in *one* and *once* we have the sound without the character, and yet drop it again in *only*. The Danish dialect of the Teutonic language is remarkable for throwing off the *w*, thus *word* in the mouth of a Dane is *ord*.

For the assertions of the grammarians and the opinions of the learned with regard to the digamma, see Kidd's edition of Dawes's *Miscellanea Critica*, pp. 175-335. The editor has given a list of the Greek words which he supposes once to have possessed this letter.

DIGBY, EVERARD, was born in 1581, of an antient, honourable, and wealthy family. His father, who was a Roman Catholic, and a man reputed for learning, died in 1592, leaving the estates at Tilton and Drystoke in Rutlandshire to his son, the charge of whose education he had committed to some priests of his persuasion. In 1596 Everard married the only daughter and heiress of William Mulsho or Moulsoe of Goathurst in Buckinghamshire, whose parents dying soon after the marriage, he acquired a large estate in right of his wife. In 1603 he was knighted by James I. at Belvoir Castle, which the king visited in his journey from Scotland to London to take possession of the throne.

The share which Sir Everard Digby took in the Gunpowder Plot is the sole cause of his celebrity. This conspiracy was projected when he was twenty-four years old: the oath of secrecy was administered, and the design communicated to him by Catesby about Michaelmas, 1605. When Digby first heard of the plot he was averse to it, but forbore to reveal it on account of his oath: afterwards, when he found that it was approved by Roman Catholic priests, the religious scruples which he had entertained were removed, and he united cordially in the project, contributing towards its execution a quantity of horses, arms, and ammunition, together with 1500*l*. in money. Digby was not concerned in the preparation of the vault; the share of the plot that was allotted to him was to assemble a number of the Roman Catholic gentry on the 5th of November, at Dunchurch in Warwickshire, under the pretence of hunting on Dunsmoor Heath, from which place, as soon as they had received notice that the blow was struck, a party was to be despatched to seize the Princess Elizabeth at the house of Lord Harrington, near Coventry. The princess was to be immediately proclaimed queen in case of a failure in securing the person of the prince of Wales or the young duke of York, and a regent was to be appointed during the minority of the new sovereign. Digby assembled his party, and rode to Lady Catesby's at Ashby Ledgers to hear the result of the scheme. In the evening five of the party arrived, fatigued and covered with dirt, with news of the discovery of the plot and the apprehension of Fawkes. A short consultation was held as to what was best to be done; and it was agreed to traverse the counties of Warwick, Worcester, and Stafford into Wales, where it was thought that they should find many adherents, exciting, as they went along, the Roman Catholic gentry to join them in a general insurrection. They carried off fresh horses in the night by stealth from the stable of a breaker of cavalry horses in Warwick; they seized arms at Lord Windsor's residence at Whewell; and on the 7th occupied a house at Holbeach belonging to Stephen Littleton. But all hope of accession to their numbers was at an end. 'Not one man,' says Sir Everard Digby in his examination, 'came to take our part, though we had expected so many.' The Roman Catholic gentry drove them from their doors, reproaching them with having brought ruin and disgrace on the Catholic cause by their ill-advised enterprise; while the common people stood and gazed upon their irregular train, and evinced anything but a disposition to join them. Sir Everard Digby forsook his companions at Holbeach, with the intention, as he stated, of hastening some expected succours: he was overtaken at Dudley, apprehended, and conveyed to London. On Monday, the 27th of January, 1605-6, he was tried, with his fellow-conspirators. No doubt of their guilt was entertained; though written depositions only were given in by the prisoners, and no witness was orally examined: Digby alone pleaded guilty. They were executed on the following Thursday. Sir Everard Digby has been described by Greenway as profound in judgment, and of a great and brilliant understanding: but we distrust this partial writer; he appears throughout this transaction rather as a weak and bigoted young man, never acting upon his own judgment or impulses, but submitting himself entirely to the control and guidance of the Jesuits. (Abridged from the *Library of Entertaining Knowledge*, 'Criminal Trials,' vol. ii.)

DIGBY, KENELME, the son of Sir Everard Digby, was born in 1603, three years before his father's execution. He was educated in the Protestant faith, and sent to Oxford at the age of fifteen, having been entered at Gloucester Hall. His ability was early apparent, and when he left the university in 1621 with the intention of travelling, he had acquired considerable reputation. After having spent two years in France, Spain, and Italy, he returned to England in 1623, and was knighted at Lord Montague's house, Hinchinbroke, near Huntingdon, in October in the same year. Under Charles I. he was a gentleman of the bedchamber, a commissioner of the navy, and a governor of the Trinity House. In 1628 he obtained the king's permission to equip, at his own expense, a squadron, with which he sailed first against the Algerines, and afterwards against the Venetians, who had some dispute with the English. His conduct as a commander was creditable to him. Upon the death of Dr. Allen of Gloucester Hall in 1632, Sir Kenelme Digby became possessed of a valuable collection of books and manuscripts, which were bequeathed to him by his former tutor. The religious principles that he had imbibed under this learned man could not have been deeply rooted; for when Digby returned to France he was converted to Catholicism (1636), the religion of his parents. His conversion was the subject of a long correspondence with Archbishop Laud, who had always taken an interest in Digby on account of his unusual ability and learning.

He returned to England in 1638. On the breaking out of the civil war, he was imprisoned as a Royalist in Winchester House: during his confinement he wrote a refutation of Brown's 'Religio Medici,' which occupied him until the petitions made by the queen of France for his relief were granted, and he was allowed to retire to that country. At Paris he was kindly treated by the court· and he became familiar with the celebrated Descartes, and associated with the principal men of learning. When the Royalist party had broken down, and had ceased to be formidable, Digby went home to England, with the intention of residing upon his estate, but the parliament hearing of his return, forbade him the kingdom under penalty of death. The cause of this severity was the zeal that his eldest son had shown in the king's service, when, in 1648, with the duke of Buckingham and others, he made a stand near Kingston in Surrey. Young Digby was afterwards killed by Colonel Scroop in Huntingdonshire. Sir Kenelme now again travelled in France and Italy, and was everywhere received as a man of extraordinary merit. In 1655 his personal affairs required his presence in England; and during his stay, his frequent attendance at the Protector's court was in no small degree inconsistent with his prior conduct. The feelings which had led him to fight the duel in which he killed Lord Mount le Ros, because he had drank Charles's health as the 'arrantest coward upon earth,' must have now been totally obliterated. During a subsequent residence in the south of France he read many papers on different philosophical questions before literary societies, of which he was a member. This course he afterwards followed in England, whither he returned in 1661, and passed the remainder of his life. He died of the stone in 1665. Sir Kenelme Digby married Venetia Anastasia Stanley, daughter of Sir Edward Stanley of Tongue Castle in Shropshire. This lady was more celebrated for her beauty than her virtue. Before her marriage she had borne more than one child to her lovers, among whom was the duke of Dorset, who had settled 500*l*. a year upon her. Sir Kenelme showed great anxiety to preserve her beauty: he invented cosmetics for that purpose, and made her the subject of several strange experiments. There are pictures of her by Vandyke, one of which is now in Windsor Castle. She died suddenly, leaving one son by her husband.

Sir Kenelme Digby, though he fell into the errors of philosophy and many of the wild dreams which were common in his day, was certainly possessed of no ordinary talents: for his character we must refer our readers to Lord Clarendon (*Life*, vol. i., p. 34), who has ably described it. The following is a list of his writings:—'A Conference with a Lady about the choice of a Religion,' Paris, 1638; 'Letters between Lord George Digby and Sir Kenelme Digby concerning Religion,' Lond. 1651; 'Observations on Religio Medici,' Lond. 1643; 'Observations on part of Spenser's Fairy Queen,' Lond. 1644; 'Treatise on the Nature of Bodies,' Paris, 1644; 'A Treatise on the Soul, proving its immortality,' Paris, 1644; 'Five Books of Peripatetick Institutions,' Paris, 1651; 'A Treatise of adhering to God,' Lond. 1654; 'Of the Cure of Wounds by the Powder of Sympathy,' Lond. 1658; 'Discourse on Vegetation,' Lond. 1661. Sir Kenelme Digby's valuable library, which had been removed to France at the out-breaking of the civil wars, became, on his death, by Droit D'Aubaine, the property of the French king.

DIGEST. [Corpus Juris; Justinian's Legislation.]

DIGESTION, the process by which the food is converted into nutriment. Taken in its whole extent the process of digestion comprehends the entire series of changes by which the crude aliment is assimilated into arterial blood. These changes are effected by organs which viewed collectively, comprise a most extensive apparatus commencing at the mouth and ending at the lungs.

The first changes upon the food are effected in the mouth where it is mixed with mucus and saliva. Torn to pieces by the teeth in the operation of mastication and softened by the secretions of the mouth until it is reduced to a pulp, it is then collected by the tongue and formed by that organ into a mass called a bolus. The bolus of food thus prepared is carried by the tongue to a muscular membranous bag called the pharynx, situated at the back part of the throat. The pharynx as soon as it receives the bolus contracts firmly upon it, and by a proper muscular action delivers it to the œsophagus, a long muscular tube which extends from the pharynx to the stomach. The bolus of food does not descend along the œsophagus by its own weight, for a person can swallow while standing on his head, and many animals have obviously to convey their food along the œsophagus against gravity. The food when it enters the œsophagus is transmitted along the tube by a powerful contraction upon it of the strong fasciculi of muscular fibres of which it is composed.

By the œsophagus the food is conveyed into the stomach where it is converted into a fluid termed chyme. The chyme when duly prepared in the stomach is transmitted to the small intestines, in the first portion of which it is converted into a new substance called chyle. In its passage along the second portion of the small intestines the chyle disappears, being taken up by a set of vessels named lacteals, which convey it through a double series of glands called the mesenteric glands, to the thoracic duct. By the thoracic duct it is conveyed through the abdomen into the thorax, where it is poured into one of the large veins, the subclavian, which returns the blood from the upper parts of the body to the right side of the heart to be, by the right heart, propelled into the pulmonary artery. By the pulmonary artery the chyle now mingled with venous blood is conveyed to the lungs, where it undergoes its ultimate change and is converted into arterial blood. The large intestines meantime carry out of the body that portion of the food which has not been converted into chyle.

The structure of the different parts of the extensive apparatus concerned in carrying on this series of changes, a structure fitting them in the most admirable manner for performing the specific offices assigned them, will be described under the names of the respective organs; at present we shall confine ourselves strictly to an account of the phenomena of digestion.

The food torn, as has been stated, into minute fragments by the operation of mastication, softened and brought into the state of a pulp by its admixture with mucus and saliva, and raised nearly to the temperature of the blood by the warmth of the mouth, is received into an extensive chamber, the stomach, where it is constantly maintained at a temperature of 100° of Fahrenheit, and kept in a state of gentle but almost unceasing agitation by a peculiar motion of the stomach, effected by its muscular fibres and called from its striking resemblance to the motion of the earthworm, peristaltic. The essential phenomena which take place on the introduction of the food into the stomach are the following.

The food on entering the stomach is not arranged indifferently in any part of the chamber, but is detained in the great extremity, or that portion of the stomach which is near the entrance of the œsophagus, termed the cardiac extremity. This portion of the stomach during the actual process of digestion appears to be cut off from the rest by a contraction of the circular fibres of the muscular coat, called the hour-glass contraction, by which about a third of the length of the stomach towards its small or pyloric extremity is separated from the great or cardiac extremity. The food received in the cardiac extremity is slowly dissolved; this solution takes place at the surface; 'in proportion as it proceeds the dissolved part is rolled off the rest by the peristaltic action of the fibres of the stomach and carried to the pyloric portion,' where it accumulates. Thus the undissolved and the dissolved portions of the food are in different parts of the stomach; the undissolved portion in the cardiac, and the dissolved portion in the pyloric extremity.

A remarkable change takes place on the inner or mucous surface of the stomach, the moment a portion of food comes in contact with it. This change has been seen to take place in the stomachs of animals, laid open during the process of digestion for the purpose of affording an opportunity to observe the phenomena, and even in the human stomach, which, in more than one instance, has been completely exposed to view in consequence of wounds accidentally inflicted. The mucous coat of the stomach, which is of a pale pink colour when the stomach is empty, becomes of a bright red colour when excited by the contact of food. Over this reddened surface are visible, more especially when it is examined through a magnifying glass, innumerable minute lucid points, from which distils a pure limpid and colourless fluid. This fluid, as it is discharged, is absorbed by the aliment in contact with the surface of the stomach, or collects in small drops and trickles down the sides of the stomach to the more depending parts, and there mingles with the food and dissolves it. This fluid, the true solvent of the food, is termed the gastric juice. It has been ascertained to be the efficient agent in digestion, and its solvent power has been demonstrated by a series of most decisive experiments long ago performed by Spallanzani and others. This distinguished physiologist swallowed a metallic tube perforated with holes and filled with flesh; he allowed the tube to remain in the stomach four hours, and then contrived to throw it up by exciting vomiting mechanically. The flesh in the tube was found to be thoroughly soaked with the fluid of the stomach; its surface was in a dissolved state, being soft and gelatinous, and moreover it had wasted from fifty-three to thirty-eight grains. Subsequently Dr. Stevens induced a person practised in swallowing pebbles, to swallow a hollow silver sphere, containing raw or cooked flesh, or vegetables, and perforated with holes that would admit a crow quill; the sphere was voided in about forty hours perfectly empty. Next Mr. Hunter observed that the great extremity of the human stomach is sometimes found after death in a softened state and even in a state of partial solution, the coats of the stomach being dissolved by its own gastric juice and the edges of the opening appearing pulpy, tender and ragged, and even the parts adjacent to the stomach, as the spleen, the diaphragm, and the lungs, being in like manner softened.

This solution of the food is wholly different from the spontaneous resolution which warmth and moisture tend to produce in it. Exposure of the food to warmth and moisture decomposes it by the process of putrefaction; but the gastric juice is antiseptic, and stops the putrefying process even after it is considerably advanced. The solution of the food by the gastric juice is a chemical operation, and the gastric juice is a chemical agent, the exact nature of which is now clearly ascertained. Spallanzani discovered that the gastric juice is of an acid nature. Some years ago Dr. Prout ascertained that this acid is the muriatic. Dr. Prout's experiments were repeated by some distinguished chemists in France with different results; but the accuracy of Dr. Prout's conclusions was afterwards confirmed by the experiments of Tiedemann and Gmelin, and they have received a fresh confirmation by the more recent experiments of Bracconnot and Blondelot, so that it may be now considered as established that the agent by which the solution of the food in the stomach is effected is muriatic acid or chlorine. If meat and gastric juice be enclosed in a glass tube, and kept at the temperature of the human body, a product is obtained closely resembling the fluid formed by the solution of the food in the stomach. If meat be enclosed in a glass tube with dilute muriatic acid, and kept at the temperature of the blood, a perfectly similar product is obtained.

The muriatic acid constituting the essential ingredient of the gastric juice is conceived to be derived by an act of secretion from common salt, muriate of soda, contained in the blood. The alkali, the base of the salt, is retained in the blood to maintain the alkaline condition essential to its healthy constitution, while the acid is liberated and poured, in the form of gastric juice, into the stomach to accomplish the solution of the food.

After the food has undergone the action of the gastric juice, it loses its sensible properties, and is converted into the homogeneous semi-fluid mass which has received the name of chyme. Specific differences are distinguishable in chyme, according as the food from which it is formed has consisted of vegetable or animal matter, and according as it has contained fatty or oily substance, or has been destitute of them. Usually however it consists of a pultaceous mass, of a greyish colour; it has a sweetish taste, and is slightly acid. The character common to it, from whatever kind of food it may have been produced, and therefore distinctive of it, is its acidity.

Gradually as it is formed, the chyme accumulates in the pyloric extremity of the stomach. When the accumulation amounts to a certain quantity, the pylorus relaxes, and allows the chyme to flow from the stomach into the first portion of the small intestines, the duodenum. Here it is mixed with the mucus of the intestines, with the pancreatic juice, and with the bile. The bile slowly and at intervals, a drop about twice in a minute, flows into the duodenum, and diffuses itself over the neighbouring surface. On coming in contact with the chyme, the bile imparts to it its sensible qualities, its colour and bitterness. But in a short time a spontaneous change takes place in the chyme. It separates into a whitish tenacious fluid termed chyle, and into a grey pulp: the first is the nutritive part of the food, the second is its excrementitious portion. If fat or oil, whether of vegetable or animal matter, have formed part of the aliment, the chyle is of an opaque white colour; if not, it is of a greyish colour. It differs in its chemical character from chyme; for chyme is acid: chyle, on the contrary, is alkaline.

The chyle, together with the excrementitious portion of the food, is slowly transmitted along the small intestines. The progress of the chyle is rendered slow, partly by its own tenacity, in consequence of which it adheres with some degree of firmness to the villi, and its progress is still farther retarded by the *valvulæ conniventes*, which act as partial valves. [INTESTINES, SMALL.] In its course through the small intestines the chyle gradually disappears, being absorbed by the lacteal vessels, so called from the milk-like fluid they contain. The lacteals commence by open mouths on the surface of the villi. [LACTEALS.] Loaded with chyle, the lacteals penetrate the coats of the intestine, pass between the layers of the mesentery [MESENTERY], and enter the first order of mesenteric glands. In the mesenteric glands the lacteals unite freely with each other, and become exceedingly convoluted. On emerging from these glands the lacteals pass, still between the layers of the mesentery, on to the second order of mesenteric glands, which they enter, and in which they present the same convoluted appearance as in the first order. On emerging from the second order of mesenteric glands, the lacteals pass on to the receptacle of the chyle, which forms the commencement of the thoracic duct. [THORACIC DUCT.] In the receptacle of the chyle terminates another system of absorbent vessels, termed lymphatics, from the colourless and pellucid fluid, called lymph, which they contain. From the receptacle of the chyle, the chyle and lymph commingled flow into the thoracic duct, by which tube they are transmitted through the abdomen and thorax to the left subclavian vein, where they are mixed with venous blood. Together with the blood contained in this great vein, the chyle and lymph are sent by a direct and short course to the lungs.

The result of the successive changes thus wrought upon the food by these progressive steps of the digestive process, is to approximate the crude aliment more and more nearly to the chemical condition of the blood. 'This is accomplished partly by the gastric and intestinal juices, and partly by matters combined with the food, highly animalized in their own nature, and endowed with assimilative properties, as the salivary secretion mixed with the food during mastication; the pancreatic and biliary secretions mixed with the food during the conversion of chyme into chyle; the mesenteric secretions mixed with the elaborated chyle of the mesenteric glands; and, lastly, organized particles, which have already formed a part of the living structures of the body, mixed with the chyle under the form of lymph in the thoracic duct.'

In the stomach, by the agency of the gastric juice, a superfluity of water is chemically combined with the original element of the nutritive matter contained in the food, by which the solution of the food is effected. This Dr. Prout terms a reducing process, because, by its combination with water, the nutritive element is reduced to a weaker state. This element Dr. Prout conceives to be albumen, although he states that he has been unable to detect true albumen in the stomach when none has been present in the food. 'Though the proportions,' he says, 'of the different ingredients of the chyle, as ultimately formed, are liable to be much varied, according to the nature of the food, yet whatever the nature of the food may be, the general components and character of the chyle remain always the same. The stomach must therefore be endowed with a power or faculty, the agency of which is to secure the uniform composition of the chyle by appropriate action upon such materials as circumstances may bring within its reach. For indeed the chief materials from which chyle is formed, namely, the albuminous and oleaginous principles, may be considered as already fitted for the purposes of the animal economy, without undergoing any essential change in their composition. But the saccharine class of aliments, which form a very large part of the food of all animals (except of those subsisting entirely on flesh), are by no means adapted for such speedy assimilation. Indeed, one or more essential changes must take place in saccharine aliments previously to their conversion either into the albuminous or into the oleaginous principles. Most probably, under ordinary circumstances, these essential changes are altogether chemical, that is to say, they are such as do take place, or rather would take place, if the elements of the substances thus changed in the stomach could, out of the body, be so collocated as to bring into action the oppositions necessary to produce these changes. Thus the saccharine principle spontaneously becomes alcohol, which is merely an oleaginous body of a weak kind. When therefore in the stomach it is requisite that sugar be converted into oil, it is probable that the sugar passes through precisely the same series of changes it undergoes out of the body, during its conversion into alcohol. We cannot trace the conversion of sugar into albumen, because we are ignorant of the relative composition, and of the laws which regulate the changes of these two substances.'

If the indications of albumen in the chyme be not well marked, albumen is largely developed in the chyle of the small intestines, while, in that of the mesenteric glands and the thoracic duct, a large portion of the watery particles in the chyme of the stomach and the chyle of the intestines is removed, so that the action of the mesenteric glands seems to be the converse of that of the stomach, namely, a completing power by which the albumen is progressively brought nearer and nearer the condition in which it exists in the blood.

It is the office of the large intestines into which only a very small portion of chyle enters, to prepare the excrementary part of the aliment for its expulsion, and to generate the force by which, when duly prepared, it is conveyed from the body. These organs possess a modification of structure adapting them in the most admirable manner for the performance of this two-fold office. A concise description of the apparatus of digestion, and a more minute account than could be given here of its phenomena, will be found in the chapter on digestion in the 'Philosophy of Health,' and the details of all that is known upon the subject up to the present time are contained in Mayo's 'Physiology;' Bostock's 'Elements of Physiology;' Elliotson's 'Blumenbach,' and Tiedemann's 'Physiology of Man;' the first volume of which is translated by James Manby Gully, M.D., and J. Hunter Lane, M.D., F.L.S.

DIGESTION, in chemistry, and especially in pharmaceutic chemistry, is the exposure of any substance to partial or total solution in a fluid, either at common temperatures or with a gentle heat: thus in the preparation of tinctures, the substance whose virtue is to be extracted is said to be *digested* in alcohol or spirit of wine, generally diluted with water. It is commonly performed in a glass matrass, which should not be more than half filled, and covered with a piece of wet bladder, so that the evaporation of the menstruum or spirit may be prevented as much as possible; if the heat be so great as to endanger the bursting of the vessel or the bladder, the latter should be pierced with one or more small holes.

The matrass may be heated either by means of the sun's rays, of a common fire, or of the sand-bath, or a stove: when the heat is so great that it would occasion the loss of a valuable menstruum, as spirit of wine, without any provision for condensing it being employed, a distilling apparatus should be made use of. Formerly a method of digestion called *circulation* was resorted to; this consisted in luting a close head on the matrass, in which the vapour was condensed, and ran back out of the digester without loss, it being condensed in the head merely by exposure to the air.

DIGGES, LEONARD, a distinguished mathematician of the sixteenth century, was descended from an antient family in the county of Kent. He was born at Digges-court, in the parish of Barham, in the same county. He was educated at Oxford; but having an ample property, he retired to his own seat, devoting his life to the study of geometry and its practical applications, which he cultivated with great success. He died in 1574. His writings abound with invention, and his views are developed with great perspicuity and clearness; but the subjects on which he wrote, and the improvements which he made being now familiar to all practical mathematicians, any account of them beyond the titles of the works which he wrote would be superfluous here

1. 'Tectonicum; briefly showing the exact Measuring and speedy Reckoning of all manner of Lands, Squares, Timber, Stones, Steeples, &c.' 4to., 1556. This was enlarged and improved in a second edition by his son Thomas Digges, in 1592; and this again was reprinted in 1647.

2. A geometrical and practical treatise, under the title of 'Pantometria;' in three books; which he left in MS., and which was printed with improvements by his son; fol., 1591.

To this was added by the editor, 'A Discourse Geometrical of the Five Regular and Platonic Bodies, containing sundry Theoretical and Practical Propositions arising from the mutual Conference of these Solids, Inscription, Circumscription, and Transformation.' Before this time geometers had but little extended the investigations contained in the 15th book of Euclid; and this curious treatise contained the most ample collection of properties that appeared in any book before the time of the publication of Abraham Sharpe's 'Geometry Improved.'

3. 'Prognostication Everlasting of Right Good Effect; or, Choice Rules to judge of the Weather by the Sun, Moon, Stars, &c.', 4to., 1555, 1556, and 1564. Also with corrections and additions by his son; 4to., 1592.

DIGGES, THOMAS, the only son of Leonard Digges. He was educated by his father with great care, and afterwards at Oxford, where he much distinguished himself; and ultimately became one of the first mathematicians of his age.

He chose the military profession, and was appointed muster-master-general to the forces sent out by Queen Elizabeth to succour the oppressed inhabitants of the Netherlands. Of his military career, however, no other evidence is known to exist, except his writings on the subject. These prove that he must have given considerable attention to the details of his profession, and therefore have been a considerable period on active service. The following is a list of his published writings, independently of editing his father's works:—

1. Alæ sive Scalæ Mathematicæ, 4to., 1573. A curious work.

2. A Letter on Parallax, printed in Dee's Parallacticæ Commentationis praxeosque nucleus quidam, 4to., 1573.

3. An Arithmetical Military Treatise, containing so much of arithmetic as is necessary towards military discipline, 4to., 1579.

4. An Arithmetical Warlike Treatise, named Stratioticos, compendiously teaching the science of numbers as well in fractions as integers, and so much of the rules and equations algebraical, and art of numbers cossical, as are requisite for the profession of a souldier. Together with the moderne militaire discipline, offices, laws, and orders in every well-governed campe and armie, inviolably to be observed, 4to., 1590.

5. A brief and true Report of the proceedings of the Earle of Leycester, for the Relief of the town of Sluice, from his arrival at Vlishing, about the end of June, 1587, untill the surrender thereof, 26 Julii ensuing, whereby it shall plainlie appear his excellencie was not in anie fault for the surrender of that towne. Published with the last, 1590.

6. A brief discourse what orders were best for repulsing any forraine forces, if at anie time they should invade us by sea in Kent or elsewhere. Published with the two last, 1590.

7. A perfect description of the celestial orbs according to the most antient doctrine of the Pythagoreans. This was published as a supplement to his edition of his father's Prognostication Everlasting, 4to., 1592.

8. A humble motive for Association to maintain the Religion Established, 8vo., 1601.

To this is added a letter to the Archbishops and Bishops to enforce the same object.

9. England's Defence: or a treatise concerning invasion; written in 1599, but not published. It is, essentially, a second edition of the tract already spoken of in the Stratioticos.

Digges wrote many other works which he left in MS., and which have never been published, on account, it is stated, of the perplexity created by lawsuits in which he was engaged. He died in 1595; but, except the accomplished politician and elegant writer, Sir Dudley Digges, none of his children claim a niche in the history of their times, though two others were authors of printed works.

DIGIT, a finger, a term employed to signify any symbol of number from 0 to 9. According to the original application of the term, the ten first numbers should be called digits, but universal practice employs the word to signify the ten symbols used in reckoning numbers. Thus ten (10) is a number of two digits.

DIGITA'LIA, a vegetable alkali procured from the *Digitalis purpurea*, or foxglove: but little is known of this substance; it is stated to have been obtained in minute prisms with a rhombic base. Digitalia resembles the other vegetable alkalis in restoring the blue colour of litmus which has been reddened, and in the bitterness of its taste, but it is much more soluble in water than they generally are. It has not been analyzed. Its therapeutic action is stated to be similar to that of the foxglove.

DIGITA'LIS, a genus of Scrophulariaceous plants, distinguished by its five-parted leafy calyx, its irregular funnel-shaped inflated corolla with an oblique limb, the upper lip of which is short and two-lobed, the lower three-lobed, and its ovate acuminate capsule, splitting into two many-seeded valves. The flowers in all the species are arranged in long racemes, are either yellow, purple or brown, and generally showy; the leaves alternate upon a round herbaceous stem.

Several species are known, the most complete account of which is in Lindley's 'Digitalium Monographia;' it is however probable that some of the so-called species in that work are mere varieties or hybrids. *D. lutea* is a common plant in the woods of France and Germany. *D. ochroleuca* and *grandiflora* are met with rather more to the eastward; while *D. ferruginea* and its allies, with short roundish rust-coloured flowers, occur not unfrequently in the south-eastern parts of Europe and in Asia.

Over all the west of Europe, but not in Asia, is found abundantly, especially in England and France, the *D. purpurea*, a very handsome species, with large purple or white flowers, to which the name of foxglove is popularly applied. It is a biennial, with oblong, stalked, scalloped, wrinkled leaves, grey with hairs, and a stem about two feet high, also covered with a close soft nap. The purple or white pendulous flowers are above an inch and a half long, and are arranged in one-sided racemes; in the inside of their corolla, on the lower lip, they are bearded with long hairs, and gaily spotted with blackish purple specks. There are four didynamous stamens shorter than the corolla, with large smooth anthers two-lobed at the base.

The energetic, stimulating, acrid, narcotic properties of this plant have caused it to be extensively employed medicinally.

DIGITA'LIS PURPU'REA, fox-glove, a biennial plant, of which the leaves and seeds are used. The leaves are sometimes accidentally confounded with those of different species of verbascum, and of the conyza squarrosa. The most powerful leaves are those procured from plants growing on the sunny sides of hills. They must be carefully dried, and protected from damp. The active principle appears to reside in an extractive substance, which by careful evaporation may be crystalized, and to which the name of Digitaline has been given. This principle is soluble in water, in alcohol, and possibly in æther. It is very poisonous. One grain dissolved in a little water killed a rabbit in a very short time. Digitalis is given in powder, made into pills, or in an alcoholic tincture. Diversity of opinion exists respecting its primary action on the system, some writers considering it as primarily a stimulant, and the sedative effect a consequence of the previous excitement; others regarding it as a direct sedative. It is most likely that it acts in both ways according to the dose, and frequency of administration. If a small dose be given, and repeated at short intervals, a stimulant action will be most obvious, followed at a considerable interval by a sedative effect. If on the other hand a large dose be given at first, the sedative action is immediately displayed. The effect varies also with the position of the person, being different according as he is standing, sitting, or reclining.

Digitalis is the most perfect example known of a cumulative poison, as it may be used for some time, if the doses be small, without producing any manifest effect for several days, when suddenly faintness, intermittent pulse, giddiness, and other alarming symptoms appear. These are best combated by vital stimulants, such as warm brandy and water.

Digitalis has the power of reducing in a remarkable degree the heart's action, bringing down the pulse from 120 or more to 50 or 40 beats in a minute, and causing it to become at the same time intermittent. On this power depends its medical value in some diseases. It is remarkable however that while it thus lowers arterial action, it excites the absorbents and the kidneys to increased action, and so proves a valuable diuretic in dropsy and some other diseases. It is most useful in organic affections of the heart, and in the latter stages of some inflammatory affections, such as pneumonia, in phthisis pulmonalis, chronic peritonitis, and irritative or nervous fever. In the inflammatory or turgescent stage of hydrocephalus acutus, along with calomel, Golis states it to be very valuable.

As a diuretic, it is, like most medicines of that class, uncertain in its effects: it seldom answers if much inflammatory action exist when it is exhibited. To render it more certain it is generally given along with calomel, and squils, or some other diuretic.

DIGITIGRADES. [Carnivora, vol. v., p. 307.]

DIGNE. [Alpes, Basses.]

DIGNITIES. [Titles of Honour.]

DIGY'NIA, a systematic name given by Linnæus in his artificial system, to such plants as have two styles, or a single style deeply cleft into two parts.

DIJON, in France, capital of the department of Côte d'Or, on the north-east bank of the river Ouche, a tributary of the Saône: 162 miles in a direct line south-east from Paris, and 183 miles by the road through Provens, Nogent sur Seine, Troyes, Bar sur Seine, and Châtillon sur Seine: in 47° 19′ N. lat. and 5° 2′ E. long.

Dijon existed, during the Roman dominion, under the name of Dibio or Divio. An antient legend, attested by Gregory of Tours, relates that the Emperor Aurelian made of Dibio a considerable fortress: other legends seem to confound Aurelian with Marcus Aurelius, who lived a century before. From the dominion of the Romans Dijon passed, in the fifth century, under that of the Burgundians [Burgundians], and subsequently of the Franks. Under the Carlovingian princes, Dijon was a lordship of the bishops of Langres, who often resided here; and in the ninth century was under counts of its own, who held it of the bishops as suzerains. In the eleventh century the lordship of Dijon was united to the duchy of Bourgogne. [Bourgogne.] In the twelfth century the dukes caused the city to be rebuilt after it had been burned down, and subsequently bestowed upon it a municipal constitution. In the fourteenth century new walls were erected, inclosing the Roman town and the greater part of the suburbs. Under the dukes of Bourgogne, of the first race, Dijon was erected into a viscounty, but this came to an end A.D. 1276: and the rights of the viscounts were subsequently bestowed on the municipality and citizens. The dukes of Bourgogne, both of the first and second races, usually resided here: and when Louis XI. of France took possession of Bourgogne, and established the *parlement*, or provincial tribunal, he fixed its sittings in this town.

The town is situated in a plain bounded on the west by the hills which connect the Cevennes and the mountains of Forez with the heights of Langres and the Vosges. The Suzon flows south-east and southward through this plain, and joins the Ouche under the walls of Dijon; at Val de Suzon, a few miles from Dijon, it is a tolerably copious stream, while at Dijon it is frequently dry. The streets of Dijon are not regularly laid out, but they are clean and cheerful. The houses, which are of freestone, are only of one or two stories. Of the public buildings the office of the prefect and the former palace or hall of the states of Bourgogne are the most worthy of notice: the latter contains a museum of painting and sculpture, antiquities, and subjects of natural history, and a library of 40,000 volumes; behind it is an old tower used as an observatory. In front of the palace of the states is the 'Place Royale,' an open space, surrounded by houses. There are no fountains in Dijon. The church of St. Benigne, the present cathedral, is a gothic edifice, the spire of which is admirable for its height (nearly 300 feet) and the lightness of its architecture; the interior of the church contains some fine marble tombs. The church of Notre Dame, the former cathedral, is also in the gothic style. The church of 'Les Orphelins-Sainte Anne' is an elegant modern structure, surmounted by a fine dome. The Chartreuse, or Carthusian monastery, which was outside the walls of the city on the road to Semur, and was adorned by the sumptuous tombs of the dukes of Bourgogne, has been demolished: some remains of these tombs have been preserved in the museum. There is a theatre, erected within a few years. An antient castle, flanked with immense towers, is said to have existed during the kingdom of the Burgundians, and it may be of yet higher antiquity, if we may identify it with the Roman walls which Expilly describes as remaining in his time (A.D. 1763). The ramparts of the town are kept up, and are planted nearly all round with fine trees. There are walks planted with trees round the town in its present extent, including the suburbs, which form a second circuit of promenades: and there are other promenades, in one of which (l'Arquebuse) is an immense poplar, 25 or 26 feet in circumference. (Vaysse de Villiers.) There are baths and a mineral spring.

The population of Dijon amounted in 1832 to 25,352 for the town, or 25,552 for the whole commune: this number very nearly coincides with the estimated population given by Expilly in 1763. The manufactures of Dijon include hosiery, blankets, coloured woollen-yarn, cotton-yarn, cotton-velvets, printed calicoes, muslins, linen, leather, hats, vinegar, mustard, which last is in high repute with epicures, and starch; there are many breweries. Considerable trade is carried on in corn, wine, wool, and wax candles. There is a nursery for mulberry trees. Dijon is well situated for trade at the junction of several roads; the canal de Bourgogne, which unites the Yonne with the Saône, and thus opens a communication between the basin of the Seine and that of the Rhône, passes along the valley of the Ouche, close to the town.

Dijon has long been eminent for the cultivation of science and literature. It is the seat of an académie universitaire, comprehending faculties of law, sciences, and literature. There are also a collège or high school, a seminary for the priesthood, a school of the fine arts, a school of drawing, and a secondary school of medicine: courses of instruction are delivered on geometry and mechanics applied to the arts, and on botany. There are academies of sciences, belles lettres, and arts; and a society of jurisprudence; also a botanic garden. Dijon has produced a number of eminent men, as Bossuet, Larcher, Guyton-Morveau, Daubenton, Crebillon, and Piron. Two of the dukes of Bourgogne, Jean-sans-Peur and Philippe le Bon, were born here.

The bishopric of Dijon was established in 1731: the diocese was dismembered from that of Langres, with the addition of a few parishes from the diocese of Autun. At present it comprehends the department of Côte d'Or. The bishop is a suffragan of the archbishop of Lyon and Vienne.

Dijon is the seat of a 'Cour Royale,' the jurisdiction of which comprehends the departments of Côte d'Or, Haute Marne, and Saône and Loire, which have an aggregate population of 1,149,674: there is also a 'Tribunal de Commerce.' It is the head-quarters of the eighteenth military division, which comprehends the departments of Aube, Côte d'Or, Haute Marne, Saône and Loire, and Yonne. The arrondissement of Dijon had, in 1832, a population of 135,435.

DILAPIDATIONS. In its legal sense, this term is confined to the pulling down or destroying, in any manner, any of the houses or buildings belonging to an ecclesiastical benefice, or suffering them to run into ruin or decay, or wasting or destroying the woods of the church, or suffering any wilful waste in or upon the inheritance of the church. An incumbent is bound to keep the buildings in repair, restoring and rebuilding where necessary according to the original form, without addition or modern improvement, but he is not bound to supply or maintain anything in the nature of ornament, such as painting (unless necessary to preserve exposed timbers from decay), whitewashing, and papering. For damages calculated on this principle the successor may bring his action, either in the courts of common law or in the spiritual court, against his predecessor, or, if he be dead, against his executors.

The right to damages for dilapidations, as between other persons, is governed either by the laws relating to waste and repairs, or by special contract.

DILATATION. [Expansion.]

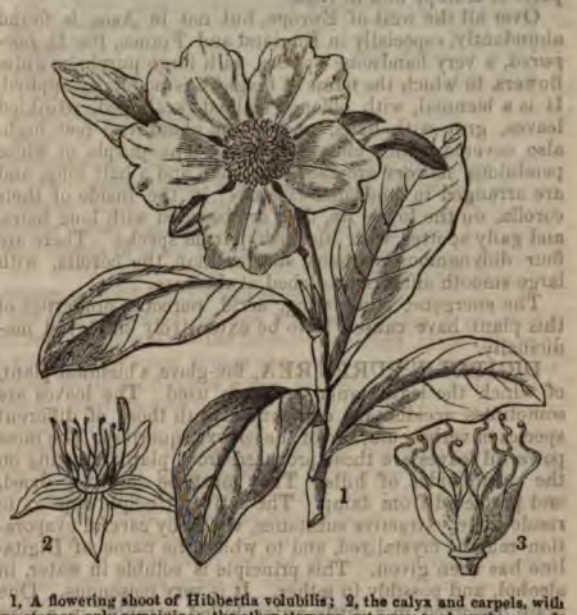
DILL, an aromatic umbelliferous plant, whose fruit is employed medicinally as a useful carminative. It is a Spanish biennial, and is called *Anethum graveolens* by botanists.

DILL. [Carminatives.]

DILLENIA'CEÆ, a natural order of plants, belonging to Polypetalous Albuminous Exogens, and related on the one hand to Magnoliaceæ, on the other to Anonaceæ. They are briefly characterized by having five sepals in a broken whorl; five petals; an indefinite number of stamens; a definite number of ovaries, which are either quite distinct or more or less consolidated; berried, or capsular and two-valved fruits; seeds surrounded by a pulpy aril; and, finally, a minute embryo lying in solid fleshy albumen. Differentially considered, Dilleniaceous plants are distinguished from Anonaceæ by their flowers being arranged upon a quinary, not ternary, type, by their albumen being solid, and not ruminated, and by their want of aromatic properties; from Magnoliaceæ by their want of stipules, and the presence of a pulpy aril round the seeds.

The plants of this order are chiefly Asiatic trees or shrubs, and usually yellow-flowered. A few occur in America. The trees are found in the woods of Tropical India; the bushes inhabit New Holland, especially in the more temperate parts, and in China; the woods of Brazil contain several kinds, usually climbers or having a trailing habit. They appear to possess astringent properties, but nothing further of importance.

The species in cultivation in this country are almost all Australasian, and have something the appearance of yellow-flowered Cistuses. Among these occur species of the curious genus Pleurandra, in which the stamens are developed on one side only of the flower, all those on the opposite side being abortive. There are few analogies to this in the vegetable kingdom. Hibbertia volubilis is a showy twiner, but its flowers are intolerably offensive in their smell.



1, A flowering shoot of Hibbertia volubilis; 2, the calyx and carpels, with one stamen only remaining; the other stamens cut away to show the carpels in the centre of the flower; 3, the ripe fruit.

DILLON. [Roscommon, Lord.]

DILUENTS comprise those liquids which are used to dilute the fluids of the human body, and thereby modify their nature. They are employed when the secretions are too viscid, or the contents of the stomach, of the intestines, or any of the glands are too acrid, and also when the heat of the body, as indicated by thirst, &c., is too great, and causes a feeling of uneasiness. They manifest their beneficial effects most quickly when the contents of the stomach or upper part of the intestines require to be diluted, as in the case of many poisons; but they also reach the kidnies or skin in a very short time after their introduction into the system, and render less acrimonious the secretions of these organs. Their utility in allaying the thirst of patients affected with fevers and other inflammatory complaints is well known, and from such patients they ought never to be withheld, as they were at one time when erroneous notions on the subject prevailed, as they not only mitigate the sufferings of the invalid, but often determine to the skin, and cause a critical perspiration. It is equally cruel and injurious to withhold drinks of a mild kind from dropsical subjects, though they require to be used by such persons in greater moderation.

Water is the simplest and often the best diluent, but it may be rendered more agreeable in some cases by being made into toast-water, or by having acids or other substances added to it. Whey or butter-milk are also agreeable diluents in many cases. The excessive use of fluids at meal-times seems to be hurtful to digestion; and diluents appear to be less proper for persons of a soft and lymphatic constitution than for the robust and sanguine. Children of a scrophulous constitution do not prosper so well on a fluid as on a dry diet; they should therefore be allowed liquids in a very moderate degree, especially towards evening.

DIMENSION (algebra), a term which is used in the same sense as DEGREE. Thus x^2y is of three dimensions or of the third degree. In geometry, length is of one dimension, surface of two, and solidity of three. Thus geometry of three dimensions means solid geometry.

DIMYA'RIA. [Conchifera, vol. viii., p. 431.]

DINAGEPORE, a district of Bengal, lying between 25°

[illegible]

[illegible] Mussulmans, and the remaining inhabitants Hindus.

The district was formerly much infested by Dacoits or gang robbers, but owing to the vigorous measures adopted by the English government in 1814 the evil was greatly checked, and has since entirely ceased.

Dinagepore, the capital of the district, is situated in 25° 37′ N. lat., and 88° 43′ E. long., about 160 miles N.N.E. from Moorshedabad. The houses, computed at about 5000 in number, are mostly of a mean description, little better than huts; a few dwellings of European residents are large and commodious, but without any architectural beauty. The population of the town is computed at 30,000. (Buchanan's *Statistical Survey*; *Report of Committees of House of Commons*, 1832.)

DINAN, a town in France, in the department of Côte du Nord, on the slope of a hill on the left bank of the river Rance, a few miles above the mouth, 199 miles west, or west by south, from Paris in a strait line, or 220 miles by the road through Dreux, Alençon, Mayenne, Fougères, and Dol; in 48° 27′ N. lat., and 2° 4′ W. long. Dinan was in the middle ages the occasional residence of the dukes of Bretagne, who had here a castle, which still remains: antient ramparts of the town are standing, and are of vast height and thickness. The church contains the heart of the Constable du Guesclin. There are extensive and pleasant public walks and a concert-room. In a valley, a short distance north of the town, are the chalybeate waters of

[illegible] At the treaty of Ryswick [illegible] was again taken [illegible] department of Sambre and Meuse. [illegible] Namur and [illegible]

DINARCHUS, [illegible] Greek orators, [illegible] Dinarchus was a Corinthian by birth, [illegible] settled in Athens and [illegible] with Theophrastus and Demetrius the Phalerean, a circumstance which combined with others enables us to determine his age with tolerable precision. Dionysius of Halicarnassus fixes his birth about the archonship of Nicophemus, B.C. [illegible] The time of his highest reputation was after the death of Alexander, when Demosthenes and other great orators were dead or banished. He seems to have got his living by writing speeches for those who were in want of them, and he carried on apparently a profitable business this way. After the garrison which Cassander had placed in Munychia had been driven out by Antigonus and Demetrius [ATHENS, p. 18] in the archonship of Anaxicrates, B.C. 307, Dinarchus, though a foreigner, being involved in a charge of conspiracy against the democracy, and having always been attached to the aristocratical party, and perhaps also fearing that his wealth might be a temptation to his enemies, withdrew to Chalcis in Eubœa. Demetrius afterwards allowed him to return to Athens with other exiles, in the archonship of Philippus, B.C. 292, after an absence of fifteen years. On his return Dinarchus, who had brought all his money back with him, lodged with one Proxenus, an Athenian, a friend of his, who, however, if the story is true, proved to be a knave and robbed the old man of his money, or at least colluded with the thieves. Dinarchus brought an action against him, and for the first time in his life made his appearance in a court of justice. The charge against Proxenus, which is drawn up with a kind of legal [illegible] is preserved by Dionysius of Halicarnassus. Of the [illegible]ous orations of Dinarchus only three remain, and [illegible] not intitled to very high praise. One of [illegible] Demosthenes touching the affair of Harpalus. [DEMOSTHENES.] Dionysius has taken great pains to disthe spurious from the genuine orations of Dinarchus. Of his genuine orations he enumerates 28 public orations and 31 private. This critic has passed rather a severe judgment on Dinarchus. He considered him merely as an imitator of Lysias, Hyperides, and Demosthenes, and though succeeding to a certain extent in copying the several styles and excellencies of these three great orators, yet failing, as all copiers from models must fail, in that natural expression and charm which are the characteristics of originality.

The few facts that we know about Dinarchus are derived from the Commentary of Dionysius on the Attic orators and the extracts which he gives from Philochorus. The three extant orations of Dinarchus are printed in the usual collections of the Attic orators.

DINDIGUL, a district in the Carnatic, bounded on the north by Coimbatore and Trichinopoly, on the east by the Bay of Bengal; on the south by Travancore and Tinnevelly, and on the west by Travancore and Coimbatore. The district is for the most part mountainous and woody, and the general surface of the country is 400 feet above the level of the sea. The Dindigul valley, inclosed by the Pilny mountains on the north, by the Travancore mountains in the west, by a range of hills on the east which extend from the town of Dindigul in the north to Sheragurry in the south, and on the south by the western ghauts, is a level tract of country 75 miles long from north to south, by about 20 miles broad. The district is watered by the Vyaur or Vaygaroo river, which rising at the base of the Alligherri hills south of the town of Dindigul, passes close to Madura, traverses the zemindaries of Shevagunga and Ramnad, and is almost wholly absorbed in a large tank about 20 miles south of Tondi, a considerable part of its waters having been previously diverted for the purposes of irrigation: except when the floods are more than usually great the bed of the river is altogether dry below Ramnad. The climate of Dindigul is reckoned much superior to that of most other parts of the south of India, the heat being much tempered by the showers caused by the interception of the clouds by the mountains, while in the cold season the thermometer seldom or never falls below 65°. The district was ceded to the English by Tippoo in 1792, and together with Madura, the Manapara pollams, Ramnad and Shevagunga has since been formed into a collectorate under the Madras presidency. The population of this collectorate was ascertained in 1822 to amount to 601,293 persons. The population of Dindigul alone has not been stated for a later period than 1811 when it amounted to 295,654 persons. Dindigul the capital of the district is situated in 10° 18′ N. lat., and 75° 2′ E. long.: 198 miles from Seringapatam and 275 miles from Madras, travelling distances. The town is clean and neat and contains about 7000 inhabitants.

DINEMOURA. [Pœcilopoda.]

DINE′TUS, a genus of Hymenopterous insects, of the section Fossores. [Larridæ.]

DINGLE, a corporate town on a bay of the same name, in the barony of Coreaguinny and county of Kerry, in Ireland; distant from Dublin 164 Irish or 208 English miles. The limits of the corporation embrace a circuit of two Irish miles by land and sea, measured from the parish church.

The antient name was Dangan-I-Cushy, or the fortress of Hussey, an adventurer of English descent, to whom one of the family of Desmond granted the tract of country on which the town stands. The name has been corrupted to Dangan-I-Couch and Dingle-I-Couch, in which latter form it is still commonly used. During the latter end of the sixteenth and beginning of the seventeenth century, Dingle enjoyed a considerable traffic with Spain, from which large quantities of wines and spices were annually imported here in return for its exports of tanned hides, Irish friezes, woollen stockings, salt beef, butter, and salmon. The town was erected into a corporation by Queen Elizabeth in 1585, at which time it sent members to the Irish parliament. About the same time it was walled in; but the walls being built of clay mortar, from the difficulty of procuring lime, soon fell to decay. It is now governed by charter of the 4th of James I. The corporation consists of sovereign, twelve burgesses, and an unlimited number of freemen. There are held a Tholsel court, court of conscience, and petty sessions once a fortnight; but the quarter-sessions which were formerly held here have been removed to Tralee, a distance of 27 miles, which is said to be productive of some inconvenience.

The town has an antique appearance. Some of the old houses are in the Spanish taste, with stone balconies, &c., and several bear date as early as the reign of Elizabeth. The vaults of the old castle built by Hussey were standing in 1780, and used as the town-gaol. The parish church, dedicated to St. James, is said to have been built at the charge of the Spanish who frequented the port; it was a large structure, but is now much decayed. The residence of the proprietor, the knight of Kerry, is the principal modern building, attached to which are some well laid out gardens. A new bridewell has lately been built here. There are also a market-house and small barrack.

The town is not lighted or watched; the streets, roads, and bridges are repaired by county presentments, and the duties of a police are performed by a portion of the constabulary force of the county.

The harbour, a land-locked creek on the northern side of the great æstuary called Dingle Bay, is capable of floating vessels of 300 tons up to the town, and is pretty well protected from the westerly winds which prevail on this coast. From the difficulty however of distinguishing the entrance, vessels bound for Dingle in a westerly gale run a risk of going to leeward on the dangerous shoals of Castlemain harbour at the head of the estuary. In 1765 a sum of 1000*l.* was voted by the Irish parliament in aid of the building of the quay. The town has improved very much within the last twenty years, although the linen trade, which formerly flourished here, has declined. The chief trade is an export of butter and corn to Liverpool. The foreign trade is confined to a single vessel. Average coasting tonnage for Great Britain, inwards, 550 tons; outwards, 500 do.; for Ireland, inwards, 200 tons; outwards, 100 do.

Population in 1821, 4538; do. in 1831, 4327: decrease in 10 years, 211. Total population within the limits of the borough in 1831, 9329. In the parish of Dingle there were, in 1834, 5 schools, educating 284 males and 106 females; of these two were small free schools. (Smith's *History of the County of Kerry*; *Reports of the Commissioners on Municipal Corporations, Ireland, &c.*)

DINGWALL. [Ross, Shire of.]

DINOPS. [Cheiroptera, vol. vii., p. 26.]

DINOTHE′RIUM, a genus of gigantic extinct herbivorous mammifers established by Professor Kaup. The remains have been found most abundantly at Epplesheim in Hesse Darmstadt, in strata of sand referrible to the second period of the tertiary formations (Miocene of Lyell). Fragments are noticed as occurring also in several parts of France, Bavaria, and Austria, by Cuvier, who, from the resemblance of their molar teeth to those of the tapirs, at first considered the animals to have been an enormous species of the last-named genus.

We select as an example *Dinotherium giganteum*, the largest species yet discovered, and which is calculated both by Cuvier and Kaup to have attained the length of eighteen feet. The bones of the head and the teeth are the principal remains hitherto found. A scapula in form resembling more nearly that of a mole than any other animal, is the principal bone of the body yet found, and this shoulder blade has been considered as indicating a peculiar adaptation of the fore-leg to the purposes of digging. In the autumn of 1836, an entire head of the animal was disinterred at Epplesheim, measuring about four feet in length and three in breadth, of which Professor Kaup and Dr. Klipstein have given figures and a description*.

It will be seen from the cuts (which are copied from the works of Dr. Kaup and those of Drs. Kaup and Klipstein), as well as from the casts in the British Museum, that though the form of the molar teeth approximates to that of the tapirs, the tusks placed at the anterior extremity of the lower jaw and curved downwards somewhat after the fashion of those in the upper jaw of the Walrus, exhibit a remarkable deviation from this part of the dental formula in any other known animal, whether living or fossil. With this is combined a form of the lower jaw itself, which can not but arrest the attention of every observer.

Dr. Buckland, in the first edition of his Bridgewater Treatise, published before the appearance of the memoir of Dr. Kaup and Dr. Klipstein, giving figures and a description of the entire head, but after the publication of Dr Kaup's earlier publication,—when adverting to the mammalia of the miocene period of Lyell, observes, that the

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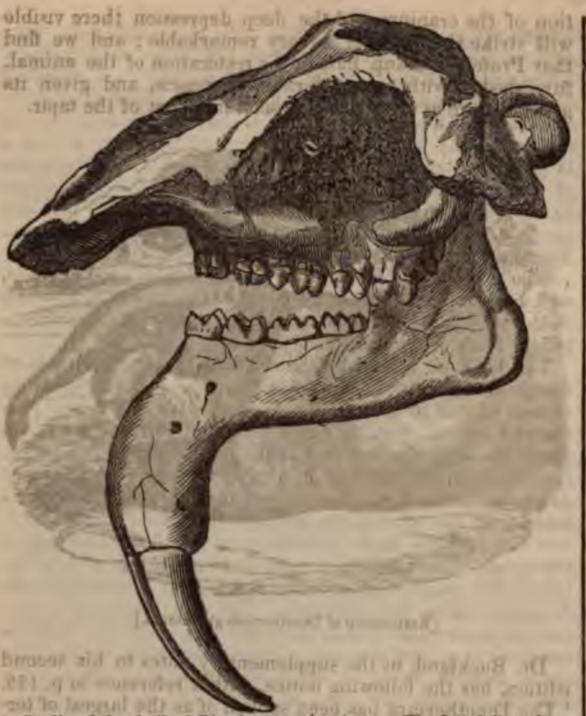
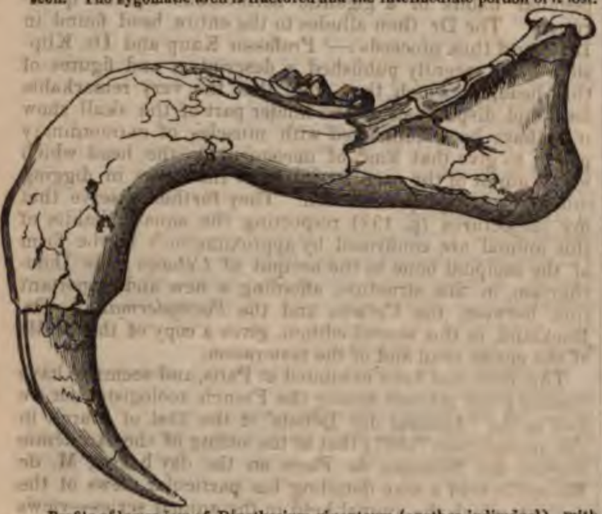
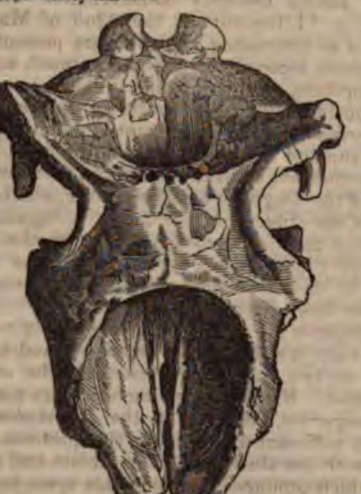
* Beschreibung und Abbildungen von dem in Rheinhessen aufgefundenen colossalen schedel des Dinotherii gigantei mit geognostischen Mittheilungen über die knochenführenden Bildungen des mittelrheinischen Tertiärbeckens von Dr. J. J. Kaup, & Dr. A. v. Klipstein. 4to., Darmstadt, 1836.



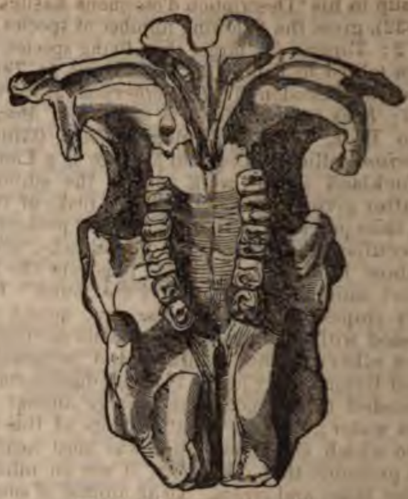
Profile of the skull of Dinotherium giganteum. The dotted line shows the edge of the coronoid process of left lower jaw, through the ramus of which the last molar tooth and a portion of the last but one are supposed to be seen. The zygomatic arch is fractured and the intermediate portion of it lost.



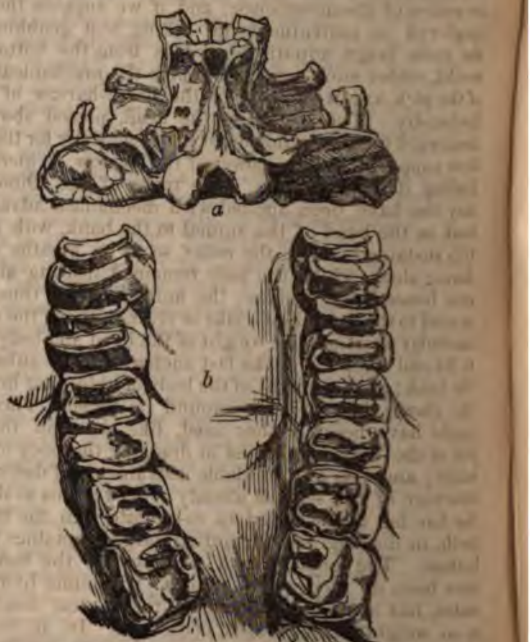
Profile of lower jaw of Dinotherium giganteum (another individual) with the coronoid process gone, and only two teeth in sight. The length of this, including the tusk, is nearly four feet.



Skull of Dinotherium giganteum seen from above.



Skull of the same seen from below.



Portions of the skull of the same; *a*, posterior part of the skull seen from below, showing the occipital condyle and foramen, &c. &c.; *b*, roof of the mouth and molar teeth; the interval between the rows widening from before backwards.

second, or miocene system of tertiary deposits, contains an admixture of the extinct genera of lacustrine mammals of the first or eocene series, with the earliest forms of genera which exist at the present time. This admixture, he adds, was first noticed by M. Desnoyers, in the marine formations of the Faluns of Touraine, where the remains of *Palæotherium*, *Anthracotherium*, and *Lophiodon*, which were the prevailing genera in the eocene period, are found mixed with bones of the *Tapir*, *Mastodon*, *Rhinoceros*, *Hippopotamus*, and *Horse*. These bones are fractured and rolled, and sometimes covered with *flustra*, thus giving indication of having been derived from carcases drifted into an estuary or sea. Similar admixtures, continues Dr. Buckland, have been found in Bavaria and near Darmstadt, and many of these animals also indicate a lacustrine, or swampy condition of the regions they inhabited. One of them (*Dinotherium giganteum*) is stated to have attained eighteen feet in length and to have been the largest of all terrestrial *mammalia* yet discovered, exceeding even the largest fossil elephant.

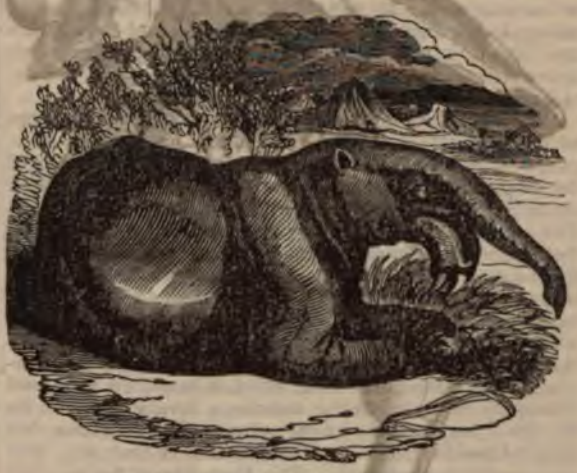
In this view of the subject, it becomes of importance to see what were the remains which were found in the strata of sand at Epplesheim near Altzey, about twelve leagues south of Mayence, in company with those of the *Dinotherium*

Dr. Kaup in his 'Description d'ossemens fossiles' (*Darmstadt*, 1832), gives the following number of species:—*Dinotherium* 2; *Tapirus* 2; larger than living species. *Chalicotherium* (allied to Tapirs) 2; *Rhinoceros* 2; *Tetracaulodon* (allied to Mastodon) 1; *Hippotherium* (allied to Horse) 1; *Sus* 3; *Felis* (some as large as a Lion) 4; *Machairodus* (allied to Bear, Ursus cultridens); *Gulo* (Glutton) 1; *Agnotherium* (allied to Dog, but as large as a Lion) 1.

Dr. Buckland in the work and in the edition above quoted, after giving a description of the tusks of the *Dinotherium*, thus proceeds, 'I shall confine my present remarks to this peculiarity in the position of the tusks, and endeavour to show how far these organs illustrate the habits of the extinct animals in which they are found. It is mechanically impossible that a lower jaw, nearly four feet long, loaded with such heavy tusks at its extremity, could have been otherwise than cumbrous and inconvenient to a quadruped living on dry land. No such disadvantage would have attended this structure in a large animal destined to live in water; and the aquatic habits of the family of Tapirs, to which the Dinotherium was most nearly allied, render it probable that, like them, it was an inhabitant of fresh-water lakes and rivers. To an animal of such habits, the weight of the tusks sustained in water would have been no source of inconvenience; and, if we suppose them to be employed as instruments for raking and grubbing up by the roots large aquatic vegetables from the bottom, they would, under such service, combine the mechanical powers of the pick-axe with those of the horse-harrow of modern husbandry. The weight of the head, placed above these downward tusks, would add to their efficiency for the service here supposed, as the power of the harrow is increased by loading it with weights. The tusks of the Dinotherium may also have been applied with mechanical advantage to hook on the head of the animal to the bank, with the nostrils sustained above the water, so as to breathe securely during sleep, whilst the body remained floating at perfect ease beneath the surface: the animal might thus repose, moored to the margin of a lake or river, without the slightest muscular exertion, the weight of the head and body tending to fix and keep the tusks fast anchored in the substance of the bank; as the weight of the body of a sleeping bird keeps the claws clasped firmly around its perch. These tusks might have been further used, like those in the upper jaw of the Walrus, to assist in dragging the body out of the water; and also as formidable instruments of defence. The structure of the scapula already noticed seems to show that the fore leg was adapted to co-operate with the tusks and teeth, in digging and separating large vegetables from the bottom. The great length attributed to the body would have been no way inconvenient to an animal living in the water, but attended with much mechanical disadvantage to so weighty a quadruped upon land. In all these characters of a gigantic, herbivorous, aquatic quadruped, we recognize adaptations to the lacustrine condition of the earth, during that portion of the tertiary periods to which the existence of these seemingly anomalous creatures appears to have been limited.'

In his description of the figures of the remains of *Dinotherium* in the same work, Dr. Buckland observes that they were found in a sand-pit containing marine shells at Epplesheim, near Altzey, about forty miles north-west of Darmstadt, where they are preserved in the museum. He adds, that bones of Dinotherium have lately been found in tertiary fresh water limestone, near Orthes, at the foot of the Pyrenees; and with them remains of a new genus allied to rhinoceros; of several unknown species of deer; and of a dog or wolf, the size of a lion. The following conclusion terminates the note appended to the description in Dr. Buckland's first edition: 'From the near approximation of this animal to the living tapir, we may infer that it was furnished with a proboscis, by means of which it conveyed to its mouth the vegetables it raked from the bottom of lakes and rivers by its tusks and claws. The bifid ungual bone (Kaup, Add., table 11), discovered with the other remains of Dinotherium, having the remarkable bifurcation which is found in no living quadrupeds, except the Pangolins, seems to have borne a claw, like that of these animals, possessing peculiar advantages for the purpose of scraping and digging; and indicating functions concurrent with those of the tusks and scapulæ.'

Upon referring to the view of the skull of *Dinotherium giganteum* seen from above, the width of the anterior portion of the cranium and the deep depression there visible will strike the observer as very remarkable; and we find that Professor Kaup has, in his restoration of the animal, furnished it with a considerable proboscis, and given its general form as a good deal resembling that of the tapir.



[Restoration of Dinotherium giganteum.]

Dr. Buckland, in the supplementary notes to his second edition, has the following notice, with a reference to p. 135. 'The Dinotherium has been spoken of as the largest of terrestrial mammalia, and as presenting in its lower jaw and tusks a disposition of an extraordinary kind, adapted to the peculiar habits of a gigantic herbivorous aquatic quadruped.' The Dr. then alludes to the entire head found in 1836, and thus proceeds:—'Professor Kaup and Dr. Klipstein have recently published a description and figures of this head, in which they state that the very remarkable form and dispositions of the hinder part of the skull show it to have been connected with muscles of extraordinary power, to give that kind of movement to the head which would admit of the peculiar action of the tusks in digging into and tearing up the earth. They further observe that my conjectures (p. 138) respecting the aquatic habits of this animal are confirmed by approximations in the form of the occipital bone to the occiput of *Cetacea*; the Dinotherium, in this structure, affording a new and important link between the *Cetacea* and the *Pachydermata*.' Dr. Buckland, in this second edition, gives a copy of the profile of the entire head and of the restoration.

This head has been exhibited at Paris, and seems to have excited great interest among the French zoologists; for we find in the 'Journal des Débats' of the 21st of March in the present year (1837) that at the sitting of the Académie Royale des Sciences de Paris on the day before, M. de Blainville read a note detailing his particular views of the position which the animal held in the animal series—views which, it is there stated, were adopted both by M. Duméril and M. Isidore Geoffroy Saint-Hilaire. These views are detailed in 'L'Institut' of the 22nd of March; and the subject is so interesting, that we here present them to the reader, more especially as they are so much at variance with the restoration, a copy of which is above given.

'M. de Blainville read a note on the fossil head of the *Dinotherium giganteum*, recently exhibited at Paris by MM. Kaup and Klipstein. According to M. de Blainville, the *Dinotherium* constituted a genus of mammifers of the family of the *Dugongs* and *Lamantins*, which family makes a part of the order or of the degree of organization named by the last-mentioned zoologist *Gravigrades*, on account of their heavy progression, and of which the first family is formed by the *Elephants*. The following were the grounds stated for this opinion.

'As regards the teeth, the molars, five in number on each side of each jaw, have their crown squared and deeply traversed by two transverse elevations, the same as in the *Lamantins*. But as this character occurs also in the *Tapirs* and *Kangaroos*, and even in the *Lophiodons*, it would be far from sufficient for deciding the question, if it were not joined with the absence of false molars and canines (a formula which produces a considerable space between the first molar and the incisors), and with the number and form of these last, which entirely resemble small tusks; only they are implanted at the extremity of the lower jaw, and are directed downwards. Whether or no there existed a pair of incisors in the upper jaw, is an uncertain point, the two extremities of this jaw, which have been found, being more or less truncated. It may, however, be inferred, from the enlarged and thick form of a fragment found some years ago, that it is possible that the animal might have had upper incisors, but smaller than those below: perhaps only rudimentary.

'As to the form of the head and its parts, it corroborates what the dental system had established. In fact, the occipital condyles are entirely terminal, or in the direction of the longitudinal axis of the head, as in the lamantins and the cetaceous edentata, modified for existence in the water. The occipital surface is large, subvertical, and even inclined from before, backwards, with a profound mesial depression, for the insertion either of a very strong cervical ligament or powerful muscles for the elevation of the head, and the basilary part of the skull is narrow in its component parts, while the syncipitofrontal region is, on the contrary, very flat, very wide, as in the lamantins and dugongs, overplumbing the temporal fossa, which is extremely wide and extremely deep, indicating enormous levator muscles for the lower jaw, not only for the purpose of mastication, but adapted besides for the particular action of that jaw, with its rake-like incisor teeth. This disposition of the temporal fossa is perfectly in harmony with the zygomatic arch, which is wide, thick, robust, and complete, as far as may be inferred from the portion which is broken, but which nevertheless offers the articulating surface of the corresponding bone, exactly as in the lamantins: perhaps, however, without the great enlargement which may be remarked at the jugal apophysis of the temporal bone in the latter. The orbit is, as in the animals last named, very small and lateral, but very largely open in the zygomatic fossa. The auditory aperture is small, narrow, and rather oblique from below upwards. The face is wide and flattened, prolonged and enlarged a little, as in the *Cetacea*, anteriorly. It presents in its middle a very large aperture, the composition of which it has not been possible to study on account of the position of the head, which is upside-down, but which aperture, though evidently wider and greater than that of the dugong, has evidently the greatest analogy to what exists in that animal. The posterior orifice of the nasal cavity is, on the contrary, very narrow. The sub-orbital hole is very considerable, but even less, perhaps, than it is in the dugong. With regard to the lower jaw, that again exhibits the greatest analogy to that of the dugong, from the manner in which its branches are curved downwards towards the anterior third part of their length; only, that of the dinotherium being armed at its recurved extremity with a tusk, the ascending ramus offers, in its width and its condyle, which is as transverse as in the *carnivora*, a concordant disposition; so that the only motions permitted should be those of elevation and depression, as in those animals. The ethmoïd surface of the temporal bone, also, is, as it were, a portion of a hollow transverse cylinder, with an apophysary lamina, having an extremely strong ridge—"une lame apophysaire d'arrêt extrêmement forte." "With this element (says M. de Blainville) we may regard it as nearly beyond doubt that the *Dinotherium* was an animal of the family of the *Lamantins*, or *Aquatic Gravigrades*, its proper position being at the head of the family, preceding the *Dugong*, and consequently preceded by the *Tetracaulodon*, which ought to terminate the family of the *Elephants*. In a word, the animal, in our opinion, was a *Dugong with tusk-incisors*. We must, then, suppose that it had only one pair of anterior limbs, with five toes on each. As to the supposition that the animal was provided with a trunk, which might be presumed from the great nasal opening, the enlarged surfaces which surround it, and the size of the suborbital nerve, as far as it may be judged of from the size of the suborbital hole, we believe that that is at least doubtful, and that it is more probable that these dispositions bear relation to a considerable development of the upper lip and the necessary modification of the nostrils in an aquatic animal, as is equally the case in the dugong. We think even that the upper lip, by its immense development, embraced the lower one, and thus hid even the base of the tusks, and that the lower one was sufficiently small, as may be presumed from the chin-holes (trous mentonniers). After this, it is easy to perceive that, of the two principal opinions which have been broached and discussed concerning this singular animal, we are much further from considering it a great species of *Edentata*, near the sloths, with Dr. Kaup, than from considering it as a tapir, as G. Cuvier did, from an examination of the molar teeth, the only parts then known. In fact, there is in our opinion much less distance, in the natural method, between a dugong and a tapir, than between a dugong and a sloth." In this note M. de Blainville has not taken into consideration that the head of the *Dinotherium*, as well as a phalanx which was found in the same locality, are referred by Professor Kaup to the same animal; but M. de Blainville does not believe that this phalanx really belonged to the *Dinotherium*. "In fact (says he), M. Lartet found with these same phalanges a portion of a tooth, which evidently indicates a great pangolin."

'At the end of the reading, M. Duméril rose to confirm the views of M. de Blainville. He insisted particularly on the transversal form and great extent of the condyle of the lower jaw and of the articular fossa destined to receive it. He much regretted the loss of the zygomatic arch, the bases of which only remain on the jugal and temporal bones. "The curvatures of this arch," said he, "would have given ideas of the volume and force of the masseter and temporal muscles, which must have been considerable. It would be important to know them to compare them with those of the *Lamantin* on one side, and on the other with the *Megatherium*, whose skeleton is at Madrid. With regard to the phalanges, which are believed to be those of the *Dinotherium*, they are certainly analogous to those of the *Sloths*; but in the *Lamantin*, the ungual phalanx, which is in fact a double pulley with a mesial projection at the base, offers at its other extremity a single point with a sort of hood (capuchon) below: that is to say, inverse to that which is found in the great species of cats (*Felis*), and very different from those of the *Sloths* and the *Ant-eaters*."'

In this statement there is one position that is rather staggering; and, indeed, we cannot but think it probable that M. de Blainville has not been quite accurately reported. He is made to observe that the articulation of the lower jaw is such that the only motions permitted should be those of elevation and depression, as in the *Carnivora*. Now that with true grinding teeth, like those of the *Dinotherium*, the jaws should be limited to the motions of elevation and depression, so admirably fitted for working the cutting edges of the scissor-teeth of the *Carnivora*, is almost inconceivable. We shall wait with some anxiety for the arrival of the head in this country, when we shall be able to ascertain whether there be not a convex eminence anterior to the transverse depression or glenoïd cavity for the condyle, indicative of a horizontal motion of the jaw backwards and forwards, a mode of operation which would be well adapted to the transverse ridges of enamel on the molar teeth of *Dinotherium*. Without venturing to give any opinion as to the true position of this interesting genus in the animal series till an opportunity has been afforded of examining the skull itself, we may be permitted to observe, that the evidence on which M. de Blainville is stated to have rested for the cetaceous character of *Dinotherium* appears to us to be rather meagre, and hardly sufficient to warrant the conclusion.

DI'OCESE, (*διοίκησις*, *dioikêsis*, literally 'administration') in the time of Constantine and afterwards was used to designate one of the civil divisions of the empire, but it is now used only in reference to ecclesiastical affairs. A diocese is a district over which the authority of a bishop extends. It is equivalent to BISHOPRICK.

Since the articles BISHOP and BISHOPRICK were written, a change has taken place in the diocesan divisions of England. The bishoprick of Bristol no longer exists. The county of Dorset, which, with the city of Bristol and a small district around, formed the diocese, is distributed between the sees of Salisbury and Exeter. The city of Bristol is annexed to the diocese of Gloucester, and the bishop of Gloucester is henceforth to be called bishop of Gloucester and Bristol. The former number of bishopricks being thus reduced, a new diocese has been formed for a new bishop, whose style is the bishop of Ripon. This diocese consists of the town and borough of Ripon and all such parts of the deaneries of the Ainsty and of Pontefract as adjoin the western boundaries of the liberty of the Ainsty and of the Wapentake of Barkston Ash, Osgoldcross and Staincross; and all that part of the county of York, which now forms part of the archdeaconry of Richmond and diocese of Chester; and also the whole of the parish of Aldborough. This diocese is thus formed out of the dioceses of York and Chester.

These changes have been made in pursuance of 'an act for carrying into effect the reports of the commissioners appointed to consider the state of the established church in England and Wales, with reference to ecclesiastical duties and revenues, so far as they relate to episcopal dioceses, revenues and patronage.' Other changes in respect of the diocesan division of the country have been made, and still further changes are contemplated. Among these is the erection of a new bishoprick, of which the collegiate church of Manchester is to be the cathedral.

DIOCLES, a Greek mathematician, who is chiefly known by his invention of the cissoid. [CISSOID.]

DIOCLETIA'NUS, CAIUS VALERIUS, was born at Dioclea, in Dalmatia, some say at Salona, about 245 A. D. according to some, but others make him ten years older. His original name was Diocles, which he afterwards changed into Diocletianus. He is said by some to have been the son of a notary, by others the freedman of a senator named Anulinus. He entered the army at an early age, and rose gradually to rank; he served in Gaul, in Mœsia under Probus, and was present at the campaign against the Persians, in which Carus perished in a mysterious manner. Diocletian commanded the household or imperial body guards when young Numerianus, the son of Carus, was secretly put to death by Aper his father-in-law, while travelling in a close litter on account of illness, on the return of the army from Persia. The death of Numerianus being discovered after several days by the soldiers near Calchedon, they arrested Aper and proclaimed Diocletian emperor, who addressing the soldiers from his tribunal in the camp, protested his innocence of the death of Numerianus, and then upbraiding Aper for the crime, plunged his sword into his body. The new emperor observed to a friend that 'he had now killed the boar,' punning on the word Aper, which means a boar, and alluding to the prediction of a soothsayer in Gaul who had told him that he would become emperor after having killed a boar. (Vopiscus in *Hist. Aug.*) Diocletian, self-composed and strong-minded in other respects, was all his life an anxious believer in divination, which superstition led him probably to inflict summary punishment upon Aper with his own hands. He made his solemn entrance into Nicomedia in September, 284, which town he afterwards chose for his favourite residence. Carinus, the other son of Carus, who had remained in Italy, having collected a force to attack Diocletian, the two armies met at Margum in Mœsia, where the soldiers of Carinus had the advantage at first, but Carinus himself being killed during the battle by his officers, who detested him for his cruelty and debauchery, both armies joined in acknowledging Diocletian emperor, A. D. 285. Diocletian was generous after his victory, and, contrary to the common practice, there were no executions, proscriptions, or confiscations of property; he even retained most of the officers of Carinus in their places. (Aurelius Victor.)

Diocletian on assuming the imperial power found the empire assailed by enemies in various quarters, on the Persian frontier, on the side of Germany and of Illyricum, and in Britain; besides which a serious revolt had broken out in Gaul among the rural population, under two leaders who had assumed the title of emperor. To quell the disturbance in Gaul, Diocletian sent his old friend Maximianus, a native of Pannonia, and a brave but rude uncultivated soldier. Maximianus defeated the Bagaudi, for such was the name the rustic insurgents had assumed. In the year 286, Diocletian chose Maximianus as his colleague in the empire, under the name of Marcus Valerius Maximianus Augustus, and it is to the credit of both that the latter continued ever after faithful to Diocletian and willing to follow his advice. Maximianus was stationed in Gaul and on the German frontier to repel invasion; Diocletian resided chiefly in the East to watch the Persians, though he appears to have visited Rome in the early part of his reign. About 287 the revolt of Carausius took place. [BRITAIN.] In the following year Maximianus defeated the Germans near Treviri, and Diocletian himself marched against other tribes on the Rhætian frontier; the year after he defeated the Sarmatians on the lower Danube. In the same year, 289, peace was made between Carausius and the two emperors, Carausius being allowed to retain possession of Britain. In 290 Maximianus and Diocletian met at Milan to confer together on the state of the empire, after which Diocletian returned to Nicomedia. The Persians soon after again invaded Mesopotamia and threatened Syria, the Quinquegentiani, a federation of tribes in the Mauritania Cæsariensis, revolted, another revolt under one Achillæus broke out in Egypt, and another in Italy under a certain Julianus. Diocletian thought it necessary to increase the number of his colleagues in order to face the attacks in the various quarters. On the 1st March, 292, or 291 according to some chronologists, he appointed Galerius as Cæsar, and presented him to the troops at Nicomedia. At the same time Maximianus adopted on his part Constantius called Chlorus. The two Cæsars repudiated their respective wives; Galerius married Valeria, Diocletian's daughter, adding to his name that of Valerianus; and Constantius married Theodora, daughter of Maximianus. Galerius was a native of Dacia, and a good soldier, but violent and cruel; he had been a herdsman in his youth, for which he has been styled, in derision, Armentarius. The two Cæsars remained subordinate to the two Augusti, though each of the four was entrusted with the administration of a part of the empire. Diocletian kept to himself Asia and Egypt; Maximianus had Italy and Africa; Galerius, Thrace and the Illyricum; and Constantius had Gaul and Spain. But it was rather an administrative than a political division. At the head of the edicts of each prince were put the names of all the four, beginning with that of Diocletian. Diocletian resorted to this arrangement probably as much for reasons of internal as of external policy. For nearly a hundred years before, ever since the death of Commodus, the soldiers had been in the habit of giving or selling the imperial crown, to which any general might aspire. Between thirty and forty emperors had been thus successively made and unmade, many of whom only reigned a few months. By fixing upon four colleagues, one in each of the great divisions of the empire, each having his army, and all mutually checking one another, Diocletian put a stop to military insolence and anarchy. The empire was no longer put up to sale, the immediate and intolerable evil was effectually cured, though another danger remained, that of disputes and wars between the various sharers of the imperial power; still it was a smaller danger and one which did not manifest itself so long as Diocletian remained at the helm. Writers have been very free of their censure upon this emperor for parcelling, as they call it, the empire; but this was the only chance there was of preventing its crumbling to pieces. Italy, and Rome, in particular, lost by the change: they no longer monopolized the wealth and power of the world, but the other provinces gained. The empire was much too large for one single man or a single central administration, especially under the dwindled influence of the Roman name, and amidst the numerous causes of local dissension and discontent, private ambition, social corruption, and foreign hostility, that had accumulated for three centuries, since the time of Augustus.

The new Cæsars justified Diocletian's expectations. Constantius defeated the Franks and the Alemanni, and soon after reconquered Britain. Galerius subjugated the Carpi, and transported the whole tribe into Pannonia. In the year 296, the Persians, under their king Narses, again invaded Mesopotamia and part of Syria. Galerius marched against them, but being too confident was defeated by superior numbers, and obliged to retire. On his meeting Diocletian, the emperor showed his dissatisfaction by letting Galerius walk for a mile, clad in purple as he was, by the side of his car. The following year Galerius again attacked the Persians, and completely defeated them, taking an immense booty. The wives and children of Narses, who were among the prisoners, were treated by Galerius with humanity and respect. Narses sued for peace, which was granted by Diocletian on condition of the Persians giving up all the territory on the right or western bank of the Tigris. This peace was concluded in 297, and lasted forty years. At the same time Diocletian marched into Egypt against Achillæus, whom he besieged in Alexandria, which he took after a siege of eight months, when the usurper and his chief adherents were put to death. Diocletian is said to have behaved on this occasion with unusual sternness. Several towns of Egypt, among others Busiris and Coptos, were destroyed. Constantine, the son of Constantius, who was educated at Nicomedia, accompanied the emperor in this expedition. Diocletian fixed the limits of the empire on that side at the island of Elephantina, where he built a castle, and made peace with the neighbouring tribes, called by some Nubæ and by others Nabatæ, to whom he gave up the strip of territory which the Romans had conquered, of seven days' march above the first cataract, on condition that they should prevent the Blemmyes and Ethiopians from attacking Egypt. Maximianus in the mean time was engaged in putting down the revolt in Mauritania, which he effected with full success. For several years after this the empire enjoyed peace, and Diocletian and his colleagues were chiefly employed in framing laws and administrative regulations, and in constructing forts on the frontiers. Diocletian kept a splendid court at Nicomedia, which town he embellished with numerous structures. He, or rather Maximianus by his order, caused the magnificent Thermæ at Rome to be built, the remains of which still bear Diocletian's name, and which contained, besides the baths, a library, a museum, public walks, and other establishments.

In February 303 Diocletian issued an edict against the Christians, ordering their churches to be pulled down, their sacred books to be burnt, and all Christians to be dismissed from offices civil or military, with other penalties, exclusive, however, of death. Various causes have been assigned for this measure. It is known that Galerius had always been hostile to the Christians, while Diocletian had openly favoured them, had employed them in his armies and about his person; and Eusebius (*Hist. Eccles.* viii.) speaks of the prosperity, security and protection, which the Christians enjoyed under his reign. They had churches in most towns, and one at Nicomedia in particular under the eye of the emperor. Just before the edict was issued, Galerius had repaired to Nicomedia to induce Diocletian to proscribe the Christians. He filled the emperor's mind with reports of conspiracies and seditions. The imperial palace took fire, Constantine (*Oratio ad Cœtum Sanctorum*) says, from lightning, and Galerius suggested to the emperor that it was a Christian plot. The heathen priests on their part exerted themselves for the same purpose. It happened that on the occasion of a solemn sacrifice in presence of the emperor, while priests were consulting the entrails of the victims, the Christian officers in the imperial retinue crossed themselves; upon which the priests declared that the presence of profane men prevented them from discovering the auspices. Diocletian who was very anxious to pry into futurity, became irritated, and ordered all his Christian officers to sacrifice to the gods under pain of flagellation and dismissal, which many of them underwent. Several oracles which he consulted gave answers unfavourable to the Christians. The church of Nicomedia was the first pulled down by order of the emperor. The rashness of a Christian who publicly tore down the imperial edict exasperated Diocletian still more: the culprit was put to a cruel death. Then came a second edict, ordering all magistrates to arrest the Christian bishops and presbyters, and compel them to sacrifice to the gods. This was giving to their enemies power over their lives, and it proved in fact the beginning of a cruel persecution, whose ravages were the more extensive in proportion to the great diffusion of Christianity during a long period of toleration. This was the last persecution under the Roman empire, and it has been called by the name of Diocletian. But that emperor had little share in it, beyond issuing the two edicts, which he did reluctantly and after long hesitation, according to Lactantius's acknowledgment: he fell ill a few months after, and on recovering from his long illness he abdicated. Galerius who had instigated the persecution, was the most zealous minister of it; the persecution raged with most fury in the provinces subject to his rule, and he continued it for several years after Diocletian's abdication, so that it might with more propriety be called the Galerian persecution. The countries under the government of Constantius suffered the least from it. (Eusebius, *Hist. Eccl.*; Lactantius *de Mort. Persecut.*; and Constantine's *Oration*, above quoted, as given by Eusebius.)

In November of that year, 303, Diocletian repaired to Rome, where he and Maximianus enjoyed the honour of a triumph, followed by festive games. This was the last triumph that Rome saw. The populace of that city complained of the economy of Diocletian on the occasion, who replied that moderation and temperance were most required where the censor was present. They vented their displeasure in jibes and sarcasms, which so hurt Diocletian that he left Rome abruptly in the month of December for Ravenna, in very cold weather. In this journey he was seized by an illness which affected him the whole of the following year, which he spent at Nicomedia. At one time he was reported to be dead. He rallied however in the spring of 305, and showed himself in public, but greatly altered in appearance. Galerius soon after came to Nicomedia, and it is said that he persuaded and almost forced Diocletian to abdicate. Others say that Diocletian did it spontaneously. On the 1st of May he repaired with his guards to a spot, three miles out of Nicomedia, where he had thirteen years before proclaimed Galerius as Cæsar, and there addressing his officers and court, he said that the infirmities of age warned him to retire from power, and to deliver the administration of the state into stronger hands; he then proclaimed Galerius as Augustus, and Maximinus Daza as the new Cæsar. Constantine, who has given an account of the ceremony, which is quoted by Eusebius in his life of that prince, was present, and the troops fully expected that he would be the new Cæsar; when they heard another mentioned, they asked each other whether Constantine had changed his name. But Galerius did not leave them long in suspense: he pushed forward Maximinus and showed him to the assembly, and Diocletian clothed him with the purple vest, after which the old emperor returned privately in his carriage to Nicomedia, and immediately after set off for Salona in Dalmatia, near which he built himself an extensive palace by the sea-shore, in which he lived for the rest of his life, respected by the other emperors, without cares and without regret. Part of the external walls which inclosed the area belonging to his palace and other buildings still remain, with three of the gates, as well as a temple, which is now a church at Spalatro, or Spalato, in Dalmatia, a comparatively modern town, grown out of the decay of the antient Salona, and built in great part within the walls of Diocletian's residence, from the name of which 'Palatium' it is believed that 'Spalato' is derived. Descriptions of the remains of the palace are given in Spon, Fortis, Cassas, and Adams's splendid engravings, London, 1764. At the same time that Diocletian abdicated at Nicomedia, Maximianus, according to an agreement between them, performed a similar ceremony at Milan, proclaiming Constantius as Augustus, and Severus as Cæsar. Both Severus and Maximinus Daza were inferior persons, and creatures of Galerius, who insisted upon their nomination in preference to that of Maxentius and Constantine, whom Diocletian had at first proposed. Maximianus retired to his seat in Lucania, but not being endowed with the firmness of Diocletian, he tried some time after to recover his former power, and wrote to his old colleague to induce him to do the same. 'Were you but to come to Salona,' answered Diocletian, 'and see the vegetables which I grow in my garden with my own hands, you would no longer talk to me of empire.' In his retirement he used to observe to his associates how difficult it is even for the best-intentioned man to govern well, as he cannot see everything with his own eyes, but must trust to others who often deceive him: 'Bonus, cautus, optimus, venditur Imperator' (Vopiscus). Once only he left his retirement to meet Galerius in Pannonia for the purpose of appointing a new Cæsar, Licinius, in the room of Severus, who had died. Licinius however did not prove grateful, for after the death of Galerius, A.D. 311, he ill-treated his widow, Valeria, Diocletian's daughter, who then with her mother, Prisca, took refuge in the territories of Maximinus Daza. The latter offered to marry Valeria, but on her refusal exiled both her and her mother into the deserts of Syria, and put to death several of their attendants. Diocletian remonstrated in favour of his wife and daughter, but to no purpose, and his grief on this occasion probably hastened his death, which took place at his residence near Salona in July, 313. In the following year his wife and daughter were put to death by order of Licinius.

Diocletian ranks among the most distinguished emperors of Rome; his reign of twenty-one years was upon the whole prosperous for the empire, and creditable to the Roman name. He was severe, but not wantonly cruel, and we ought to remember that mercy was not a Roman virtue. His conduct after his abdication shows that his was no common mind. The chief charge against him is his haughtiness in introducing the Oriental ceremonial of prostration into the Roman court. The Christian writers, and especially Lactantius, have spoken unfavourably of him; but Lactantius cannot be implicitly trusted. Of the regular historians of his reign we have only the meagre narratives of Eutropius and Aurelius Victor, the others being now lost; but notices of Diocletian's life are scattered about in various authors, Libanius, Vopiscus, Eusebius, Julian in his *Cæsars*, and the contemporary panegyrists, Eumenes and Mamertinus. His laws or edicts are in the Code. Among other useful reforms, he abolished the frumentarii, or licensed informers, who were stationed in every province to report any attempt at mutiny or rebellion, and who basely enriched themselves by working on the fears of the inhabitants. He also reformed and reduced the number of the insolent Prætorians, who were afterwards totally disbanded by Constantine.

Coin of Diocletian.
British Museum. Actual Size. Copper. Weight, 167¼ grains.

DIODA'TI, JEAN, was born in Geneva in 1576, of a family originally from Lucca. His progress in learning was so rapid, that Beza procured him to be appointed professor of Hebrew in the University of Geneva when he was but twenty-one years of age. In 1608 he was made pastor, or parish minister, and in the following year professor of theology. While travelling in Italy about 1608, he became acquainted at Venice with the celebrated Sarpi and his friend Father Fulgenzio, both antagonists of the Court of Rome, and there appears to have been some talk and correspondence between them about attempting a religious reform in Italy, but Sarpi's caution and maturer judgment checked the fervour of the other two. Diodati afterwards translated into French and published at Geneva Sarpi's History of the Council of Trent. In consideration of his theological learning, he was sent by the clergy of Geneva on several missions, first to the reformed churches in France, and afterwards to those of Holland, where he attended the Synod of Dort 1618-19, and although a foreigner, he was one of the divines appointed to draw up the acts of that assembly. He fully concurred in the condemnation of the Arminians, or Remonstrants as they were called. Diodati was also distinguished as a preacher; in his sermons he spoke with conscientious frankness, without any regard to worldly considerations. He published an Italian translation of the Bible in 1607, and afterwards a French translation which was not completed till 1644, having met with considerable opposition from the clergy of Geneva. Diodati died at Geneva in 1649. He wrote also, 'Annotationes in Biblia,' fol. Geneva 1607, which were translated into English, and published in London, 1648, and numerous theological and controversial works, among others, 'De Fictitio Pontificiorum Purgatorio,' 1619; 'De justa Secessione Reformatorum ab Ecclesia Romana,' 1628; 'De Ecclesia;' 'De Antichristo,' &c. Senebier, in his 'Histoire Littéraire de Genève,' gives a catalogue of Diodati's works. He also wrote an answer to the ecclesiastical assembly in London, in reply to letters addressed to him by some members of that assembly, and which was published in Newcastle, 1647. In it Diodati deplores the troubles both religious and civil which had broken out in England, and deprecates the continuation of a struggle in which men, 'having lost sight of the original causes that began the war, were excited by the new mutual injuries freshly done or received, the two parties being far more divided by an odious difference of reproachful names than really by the cause itself.' Diodati translated also into French Edwin Sandy's 'Account of the State of Religion in the West,' Geneva, 1626.

DIODO'RUS, a Greek historian born at Agyrium in Sicily. (*Biblioth. Hist.*, lib. i. c. 5.) Our principal data for the chronology of his life are derived from his own work. It appears that he was in Egypt about the 180th olympiad, 60 B.C. (*Bibl. Hist.* i. c. 44, comp. i. c. 83); that his history was written after the death of Julius Cæsar; that it ended with the Gallic war of that general, and that he spent thirty years in writing it. (*Biblioth. Histor.* i. c. 4, comp. v. c. 21 and 25.) In addition to this, Suidas mentions that he lived in the time of Augustus, and he is named under the year 49 B.C. by Jerome in the Chronicle of Eusebius. The title of the great work of Diodorus is the 'Historical Library' (βιβλιοθήκη ἱστορική) or 'The Library of Histories' (ἡ τῶν ἱστοριῶν βιβλιοθήκη); and it would therefore seem to have been intended by the author as a compilation from all the different historical works existing in his time. It was divided by him into forty books, and comprehended a period of 1138 years, besides the time preceding the Trojan war (*Biblioth. Hist.* i. c. 5.) The first six books were devoted to the fabulous history anterior to this event, and of these the three former to the antiquities of barbarian states, the three latter to the archæology of the Greeks. But the historian, though treating of the fabulous history of the barbarians in the first three books, enters into an account of their manners and usages, and carries down the history of these people to a point of time posterior to the Trojan war; thus in the first book he gives a sketch of Egyptian history from the reign of Menes to Amasis. In the eleven following books he detailed the different events which happened between the Trojan war and the death of Alexander the Great, and the remaining twenty-three books contained the history of the world down to the Gallic war and the conquest of Britain. (*Biblioth. Hist.* i. c. 4.) Diodorus asserts that he bestowed the greatest possible pains on his history, and had travelled over a considerable part of Europe and Asia in order to prosecute his investigations with the greatest advantage. He resided some time at Rome, and, having made himself familiar with the Latin language, was enabled to consult the Roman historians in the originals. He objects to the custom so common among Greek and Roman writers of interlarding their narratives with fictitious speeches, to which he says (*Bib. Hist.* lib. xx. init.), they made the whole history a mere appendix, although he seems to have fallen into this fault in the xxi. book (Niebuhr, *Hist. Rom.* iii., note 848); but on the other hand he thought it the duty of an historian never to omit a suitable opportunity of pronouncing merited praise or blame. (*Bibl. Hist.*, lib. xi.) Of the forty books of Diodorus's History we possess only fifteen, namely books i.—v. and books xi.—xx., but we have many fragments of the twenty-five others, to which important additions have recently been made from MSS. in the Vatican library.

With regard to the historical value of the *Bibliotheca* and the merits of the author, the most discrepant opinions have been entertained by modern writers. The Spanish scholar, Vives, called him a mere trifler, and Jean Bodin accused him, in no sparing terms, of ignorance and carelessness, while, on the other hand, he has been defended and extolled by many eminent critics as an accurate and able writer. The principal fault of Diodorus seems to have been the too great extent of his work. It was not possible for any man, living in the time of Augustus, to write an unexceptionable universal history: indeed it may be doubted whether any one writer could, even at the present day, successfully accomplish so difficult a task, and Sir Walter Raleigh's 'History of the World' is a proof that men of the greatest ability are liable to failure in such an attempt. It is not, then, a matter of surprise that Diodorus, who does not appear to have been a man of superior abilities, should have fallen into a number of particular errors, and should have placed too much reliance on authorities sometimes far from trustworthy. Wherever he speaks from his own observations he may, perhaps, generally be relied on, but when he is compiling from the writings of others he has shown little judgment in his selection, and has in many cases proved himself incapable of discriminating between the fabulous and the true. In some instances, as in his account of Egypt (see Description of the Tomb of Osymandyas), it is impossible to say whether he is speaking as an eye-witness or upon the report of others. We must not blame him for giving a Greek colouring to the manners of other nations which he describes, for it was the common practice of Greek writers to do so, and he has not erred so much in this respect as Dionysius of Halicarnassus. Although he professes to have paid great attention to chronology, his dates are frequently and obviously incorrect. (See Dodwell's *Annal. Thucydid.* and Clinton's *Fasti Hellenici*, ii., p. 259 and elsewhere; Niebuhr, *Hist. Rome*, ii., and note 1281.) However, we are indebted to him for many particulars which but for him we should never have known, and we must regret that we have lost the last and probably most valuable portion of his works, as even by the fragments of them which remain we are enabled in many places to correct the errors of Livy. The style of Diodorus, though not very pure or elegant, is sufficiently perspicuous, and presents few difficulties, except where the MSS. are defective, as is frequently the case. (Niebuhr, *Hist. Rome*, vol. iii. note 297 and elsewhere.)

The best editions of Diodorus are Wesseling's, Amstel., 1745, two vols. fol.; that printed at Deux-Ponts, 1793—1801, and Dindorf's, Lips., 1829—33, five vols. 8vo., which contains the Vatican Excerpta. There is also a smaller edition by Dindorf in four vols. 12mo., Lips., 1826. Diodorus has been translated into French by Terrasson, and two or three years ago a new translation by Miot appeared at Paris. A German translation of Diodorus was begun by F. And. Stroth (1782-1785), and finished by T. F. Sal. Kaltwasser (1786-1787). Amyot translated into French books xi. to xvii. of Diodorus's History.

DIŒCIA, the twenty-second class in the artificial method used by Linnæus in arranging plants. It comprehends such genera as have male or stamen-bearing flowers on one plant, and female or pistil-bearing flowers on another, as willows. Hence all plants having the sexes thus distinguished are called diœcious.

DIO'GENES, the Cynic philosopher, was the son of Hicesius, a money-changer of Sinope. His father and himself were expelled from their native place on a charge of adulterating the coinage, or, according to another account, Hicesius was thrown into prison and died there, while Diogenes escaped to Athens. On his arrival at that city, he betook himself to Antisthenes, the Cynic, who repulsed him rudely according to his custom, and even on one occasion threatened to strike him. 'Strike me,' said the Sinopian, 'for you will never get so hard a stick as to keep me from you while you speak what I think worth hearing.' The philosopher was so pleased with this reply that he at once admitted him among his scholars. Diogenes was soon distinguished for his extraordinary neglect of personal conveniences, and by a sarcastic and sneering petulance in all that he said. He was dressed in a coarse double robe, which served him as a cloak by day and a coverlet by night, and carried a wallet to receive alms of food. His abode was a cask in the temple of Cybele. In the summer he rolled himself in the burning sand, and in the winter clung to the images in the street covered with snow, in order that he might accustom himself to endure all varieties of weather. A great number of his witty and biting apophthegms are detailed by his namesake and biographer (Diog. Laërt., vi., c. 2). He became acquainted with Alexander the Great, who bade him ask for whatever he wanted. 'Do not throw your shadow upon me,' was the Cynic's only request. It is reported that Alexander was so struck with his originality that he exclaimed, 'Were I not Alexander, I would wish to be Diogenes.' Being taken by a piratical captain named Scirpalus, while sailing from Athens to Ægina, he was carried to Crete, and there sold to Xeniades, of Corinth, who took him home to educate his children. He discharged the duties of this situation so faithfully and so successfully, that Xeniades went about saying that a good genius had come into his house; and he was so well treated by his master that he refused an offer on the part of his friends to ransom him from slavery. He spent his time principally in the Cranium, a gymnasium near Corinth, where he died in the same year, and, according to one account, on the same day with Alexander the Great (323 B.C.), at the advanced age of 90 years. A number of works attributed to him are mentioned by Diogenes Laërtius, but none of them are extant. For the general doctrines of the sect to which Diogenes belonged, the reader may consult the article CYNICS. The following are a few of the particular opinions ascribed to him by his biographer. He thought exercise (ἄσκησις) was indispensable, and able to effect anything; that there were two kinds of exercise, one of the mind and the other of the body, and that one of these was of no value without the other. By the cultivation of the mind he did not mean the prosecution of any science or the acquirement of any mental accomplishment; all such things he considered as useless; but he intended such a cultivation of the mind as might serve to bring it into a healthy and virtuous state, and produce upon it an effect analogous to that which exercise produces upon the body. He adopted Plato's doctrine, that there should be a community of wives and children, and held with the Dorian lawgivers, that order (κόσμος) was the basis of civil government.

DIO'GENES of Apollonia, so called from his birthplace, a town in Crete, was a pupil of Anaximenes and a contemporary of Anaxagoras. The years in which he was born and died are not known, as is the case also with his master Anaximenes. But the birth-year of his contemporary and fellow-pupil Anaxagoras is known to be 500 B.C.; and Diogenes would most probably be about the same age, or perhaps rather younger. Sidonius Apollinaris (xv. 91) speaks of Diogenes as younger than Anaxagoras, — '*junior collega Anaxagoræ*.' Schleiermacher, who is followed by Schaubach, the editor of the fragments of Anaxagoras, affirms from the internal evidence of the fragments of the two philosophers, that Diogenes preceded Anaxagoras. But Diogenes might have written before Anaxagoras, and yet have been his junior, as we know was the case with Empedocles. (Aristotle *Met.* i. iii., p. 843 B.)

Diogenes followed Anaximenes in making air the primal element of all things, that out of which the whole material universe was formed; but he invested this air with the property of intelligence, or with what is called by St. Augustin a divine virtue, thus approximating but not attaining to the system of Anaxagoras. It was reserved for this last philosopher to separate mind from matter. 'As the contemplation of animal life,' says Mr. Thirlwall, 'had led Anaximenes to adopt air as the basis of his system, a later philosopher, Diogenes of Apollonia, carried this analogy farther, and regarded the universe as issuing from an intelligent principle, by which it was at once vivified and ordered —a rational as well as sensitive soul—still without recognizing any distinction between matter and mind.' (*Hist. of Greece*, vol. ii., p. 134.) Cicero (*de Nat. Deor.*, i. 12) represents Diogenes as making air his deity.

He wrote several books on Cosmology (περὶ φύσεως); and the first sentence of his work is given by Diogenes Laertius in two places (vi. 81; ix. 57). The fragments which remain have been recently collected and edited by Panzerbeiter.

There is an essay on the philosophy of Diogenes, by Schleiermacher, in the Memoirs of the Berlin Academy for 1815; and a contribution to the chronology of his life in an article on the early Ionic philosophers, by Mr. Clinton, in the Philological Museum, vol. i., p. 92. For general information concerning him the reader is referred to Diogenes Laertius, ix. 9; Bayle's *Dictionary*; and Fabricii *Bibliotheca Græca*, ed. Harles, vol. ii., p. 656.

DIO'GENES, surnamed Laërtius, because he was born at Laërtes, in Cilicia, is well known as the biographer of the Greek philosophers. But though he has described the lives of others, he has given us no account of himself, and we know nothing about him. It is supposed that he lived in the reign of Severus or Caracalla, and that he was an Epicurean. The work by which Diogenes is known is a crude contribution towards the history of philosophy. It contains a brief account of the lives, doctrines, and sayings of most persons who had been called philosophers; and though the author is evidently a most unfit person for the task which he imposed upon himself, and has shown very little judgment and discrimination in the execution, the book is useful as a collection of facts which we could not otherwise have learned, and entertaining as a sort of *omniana* on the subject. The article on Epicurus is valuable as containing some original letters of that philosopher, which comprise a pretty satisfactory epitome of the Epicurean doctrines, and are very useful to the readers of Lucretius. The most convenient edition of Diogenes is that by H. G. Hübner, Lips., 1828-31, in two volumes octavo.

DIOIS, the territory in France of which Die was the capital. [DAUPHINE; DRÔME.]

DIOME'DEA. [ALBATROSS.]

DION, of Syracuse, son of Hipparinus, one of the chief men in that city, lived under the reigns of both the Dionysii. He was originally introduced to Dionysius the elder, by his sister Aristomache, one of the king's wives, but his own merit appears afterwards to have gained him so much favour at court, that he could speak to Dionysius with the freedom of an equal. He had early become the disciple of Plato whom Dionysius had invited to Syracuse, and Plato is said to have considered him the most ardent of his pupils. Soon after his accession, the younger Dionysius began to show the effects of an imperfect and vicious education, while in private he abandoned himself to all kinds of excesses. The prospects of his country roused Dion, and he endeavoured to counteract the errors and to supply the deficiencies of the tyrant by prudent counsels and exhortations. Among other things he advised him to invite Plato to revisit the Syracusan court, setting forth the advantages which he would derive from his conversation and knowledge. Dionysius wrote a letter of invitation, but the philosopher had not forgotten the treatment which he had received from the tyrant's father, and it was with the utmost difficulty that he was prevailed on to go. The presence of Plato was dreaded by the dissolute courtiers who surrounded Dionysius, and to counteract any influence he might have, they obtained the recall of Philistus, whose talents and tyrannical tendencies they thought were likely to be a match for the philosopher. The enemies of Dion availed themselves of the same opportunity to insinuate suspicions of Dion's loyalty, and succeeded in procuring his banishment. He went first to Italy and then to Greece, where he received the highest honours. Dionysius however endeavoured to embitter his exile, and soon confiscated his lands and effects, and forced his wife to marry another person. Dion no sooner heard of this outrage, than he determined to make an effort to expel the tyrant. Though dissuaded by Plato, he began to raise troops privately, and at last assembled his forces to the number of about eight hundred in the island of Zacynthus, whence he sailed to Sicily. On landing, he found that Dionysius was absent in Italy, and he was accordingly received by the people with great joy. Dionysius on his return to Sicily, made some fruitless attempts to regain his influence, but after several defeats was forced to quit the island for Italy. Dion, however, did not long enjoy the favour of his countrymen, and by the influence of Heraclides, who estranged the minds of the people from him, he was obliged to leave Sicily; he was afterwards recalled, but was treacherously murdered, B.C. 354, at about fifty-five years of age, by his supposed friend Calippus, an Athenian. His death was generally regretted, and in honour of his high courage and patriotism a monument was raised to him at the public expense. (Diodorus Siculus xvi. 6—20; Plutarch, *Life of Dion*; Nepos, *Life of Dion*.)

DION CA'SSIUS COCCEIA'NUS, or Cocceius, was the son of Cassius Apronianus, a Roman Senator, and born at Nicæa in Bithynia about A. D. 155. On his mother's side he was descended from Dion Chrysostom, and it was from this branch of his family that he took the name of Dion. Thus though he was on his mother's side of Greek descent, and though in his writings he adopted the then prevailing language of his native province, he must be considered as a Roman. Under Commodus he lived in Rome, where he enjoyed the rank of Senator. After the death of Septimius Severus and Caracalla, under whom he held no public office, he was made governor of Smyrna and Pergamus by Macrinus. He was afterwards consul and proconsul in the provinces of Africa and Pannonia, probably under Alexander Severus (Suidas Δίων), who esteemed him so highly as to make him consul for the second time with himself. In his old age he is said to have returned to his native country. (Photius, *Dion Cassius*.)

Dion wrote a History of Rome in Greek, from the arrival of Æneas in Italy and the foundation of Alba and Rome to A.D. 229. To the time of Julius Cæsar his history was only a rapid sketch, but from that date and more particularly from the time of Commodus, when he is a contemporary writer, his narrative is very complete. Of the first 36 books there are only fragments extant: but there is a considerable fragment of the 35th book on the war of Lucullus against Mithridates, and of the 36th, on the war with the Pirates and the expedition of Pompey against Mithridates. The following books to the 54th inclusive are nearly all entire: they comprehend a period from B. C. 65 to B.C. 10, or from the Eastern campaign of Pompey and the death of Mithridates to the death of Agrippa. The 55th book has a considerable gap in it. The 56th to the 60th, both included, which comprehend the period from A.D. 9 to A.D. 54, are complete, and contain the events from the defeat of Varus in Germany to the reign of Claudius. Of the following 20 books we have only fragments, and the meagre abridgment of Xiphilinus. The 80th or last book comprehends the period from A.D. 222 to A.D. 229, in the reign of Alexander Severus. The abridgment of Xiphilinus, as now extant, commences with the 35th, and continues to the end of the 80th book: it is a very indifferent performance.

The fragments of the first 36 books, as now collected, are, 1, those called Valesiana, which were collected by Henri of Valois from various Scholiasts, Lexicographers and grammarians. 2, The Fragment a Peiresciana, taken from the great work or compilation of Constantinus Porphyrogennetus. [BYZANTIUM, p. 81.] 3, Fragment a Ursiniana, also taken from the same compilation of Constantinus Porphyrogennetus. 4, Excerpta Vaticana by Mai, which contain fragments of books 1—35 and 61—80, have been published in the second volume of the Scriptorum Veterum Nova Collectio, pp. 135—233. To these are added the fragments of an unknown continuator of Dion (pp. 234 — 246), which go down to the time of Constantine. Other fragments from Dion, belonging chiefly to the first 35 books, also published in the same collection (pp. 527—567), were found by Mai in two Vatican MSS., which contain a sylloge or collection made by Maximus Planudes.

The annals of Zonaras contain numerous extracts from Dion.

Dion as an historian is not characterized by any great critical power or judgment: indeed his own remarks are sometimes trifling. His style is generally clear, though there are occasionally obscure passages where there appears to be no corruption in the text. His diligence is unquestionable, and from his opportunities he was well acquainted with the circumstances of the empire during the period for which he is a contemporary authority, and indeed we may assign a high value to his history of the whole period from the time of Augustus to his own age. Nor is his history without value for the earlier periods of Roman history, in which though he has fallen into errors, like all the Greek and Roman writers, who have handled the same obscure subject [DICTATOR], he still enables us to correct some erroneous statements of Livy and Dionysius.

Other writings are attributed to Dion; among them a life of Arrian by Suidas (Δίων).

The first edition of the Greek text of Dion was by R. Stephens, Paris 1548, fol. from one MS., and that very incorrect and defective. Between this edition and that of Reimar there were several editions. J. Alb. Fabricius undertook a new edition of Dion, but dying before he had completed his labour, his papers came into the hands of H. S. Reimar, his son in law, who published the new edition at Hamburg 1751—1752, 2 vols. fol. with a Latin translation. The edition of Reimar is valuable, as he availed himself of the labours of all his predecessors, arranged the fragments in order, and improved the text and translation, to which he added notes. Some fragments were afterwards discovered in a MS. in the library of St. Mark, by Morelli, and published by him at Bassano in 1798, 8vo. They were reprinted at Paris in 1800, fol., in a form to accompany the edition of Reimar.

The small Tauchnitz print of Dion Cassius, 4 vols. 16mo., contains the fragments. The most recent and perhaps most useful edition is by F. W. Sturz, Leipzig, 1824, 1825, 8 vols. 8vo. There are several German translations of Dion Cassius: the most recent is by F. Lorentz, Jena, 1826, 4 vols. 8vo. There is an old French translation from the Latin, by Déroziers, 1542, fol.

DION, surnamed Chryóstomus, or the Golden-mouthed, on account of the beauty of his style, the son of Pasicrates, a man of consideration at Prusa in Bithynia, was a sophist and stoic. He was in Egypt when Vespasian, who had been proclaimed emperor by his own army, came there, and was consulted by that prince on the proper course to be adopted under the circumstances. Dion had the candour, or, as some may think, the want of judgment, to advise him to restore the republic. Afterwards he resided for some years at Rome, till one of his friends, having engaged in a conspiracy against Domitian, was condemned to death, and Dion, fearing for himself, fled to the modern Moldavia, where he remained till the tyrant's death, labouring for his subsistence with his own hands, and possessing no books but the *Phædon* of Plato and Demosthenes περὶ Παραπρεσβείας. Domitian having been assassinated, the legions quartered on the Danube were about to revolt, when Dion got upon an altar and harangued them so effectually that they submitted to the decision of the senate. Dion was in high favour with Nerva and Trajan, and when the latter triumphed after his Dacian victories the orator sat in the emperor's car in the procession. He returned to Bithynia, where he spent the remainder of his life. Accusations of peculation and treason were brought against him, but rejected as frivolous. Dion died at an advanced age, but it is not known in what year. We have eighty orations attributed to him, which are very prettily written, but not of much intrinsic value. The best edition is that of Reiske, 2 vols. 8vo., Lips., 1784. The name Cocceianus, which Pliny (Epist. x. 85, 86) gives to Dion, probably refers to his connection with the Emperor Cocceius Nerva.

DIONÆA, a most singular herbaceous plant, remarkable for the irritability of its leaves, which, when brushed against by an insect, will suddenly close upon it and hold it fast, whence it is often called Venus's Fly-trap and the Carolina Catchfly plant. It is botanically related to the Drosera, or sundew, which has also the property of seizing insects by its viscid hairs, but differs so much as to have led some botanists to doubt whether it really belongs to the same natural order. Its flower-branches, for example, are not rolled up before they unfold, but have a straight æstivation; the placentæ of the fruit are stationed at the base of the one-celled capsule; the stigma is a lacerated fringed brush, and there are other differences; but upon the whole, it is probably a genuine portion of the droseraceous order.

Dionæa has broad stalked leaves, spreading in a circle round the bottom of the flower stem. Its flower stem rises straight to the height of six or eight inches, and is terminated by a cyme of small greenish-white flowers, each of which has a calyx of five sepals, five wedge-shaped notched petals, ten hypogynous stamens, and an ovary shaped like some of the old German wine-bottles, round at the bottom, and tapering suddenly into a short neck or style. The best modern account of its habits has been given by Mr. M. A. Curtis, who thus speaks of it from his observations upon the plant in its native bogs. 'The Dionæa muscipula is found as far north as Newbern, N. Carolina, and from the mouth of Cape Fear River to Fayetteville. It is stated moreover to grow along the lower branches of the Santee, in S. Carolina; and it is not improbable that it inhabits the savannahs, more or less abundantly, from the latter place to Newbern. It is found in great plenty for many miles around Wilmington in every direction. The leaf, which is the only remarkable part, springs from the root, spreading upon the ground at a little elevation above it. It is composed of a broad stalk, like the leaf of an orange-tree, winged, and from two to four inches long, which at the end suddenly expands into a thick and somewhat rigid blade, the two sides of which are semicircular, about two-thirds of an inch across, and fringed round their edges with somewhat rigid ciliæ, or long hairs, like eye-lashes. The leaf, indeed, may be aptly compared to the two upper eyelids, joined at their bases. Each portion of the leaf is a little concave on the inner side, where are placed three delicate, hair-like organs, in such an order that an insect can hardly traverse it without interfering with one of them, when the two sides suddenly collapse and enclose their prey, with a force surpassing an insect's attempts to escape. The fringe or hairs of the opposite sides interlace, like the fingers of the two hands clasped together. The sensitiveness resides only in these hair-like processes on the inside, as the leaf may be touched or pressed in any other part without sensible effects. The little prisoner is not crushed and suddenly destroyed, as is sometimes supposed; for I have often liberated captive flies and spiders, which sped away as fast as fear or joy could hasten them. At other times, I have found them enveloped in a fluid of mucilaginous consistence, which seems to act as a solvent, the insects being more or less consumed by it. This circumstance has suggested the possibility of the insects being made subservient to the nourishment of the plant, through an apparatus of absorbent vessels in the leaves. But as I have not examined sufficiently to pronounce on the universality of this result, it will require further observation and experiment on the spot to ascertain its nature and importance.

'It is not to be supposed, however, that such food is necessary to the existence of the plant, though, like compost, it may increase its growth and vigour. But however obscure and uncertain may be the final purpose of such a singular organization, if it were a problem to construct a plant with reference to entrapping insects, I cannot conceive of a form and organization better adapted to secure that end, than are found in the Dionæa muscipula. I therefore deem it no credulous inference that its leaves are constructed for that specific object, whether insects subserve the purpose of nourishment to the plant or not. It is no objection to this view that they are subject to blind accident, and sometimes close upon straws, as well as insects. It would be a curious vegetable, indeed, that had a faculty of distinguishing bodies, and recoiled at the touch of one, while it quietly submitted to violence from another. Such capricious sensitiveness is not a property of the vegetable kingdom. The spider's net is spread to ensnare flies, yet it catches whatever falls upon it; and the ant-lion is roused from his hiding-place by the fall of a pebble; so much are insects, also, subject to the blindness of accident.' We may add, with reference to the American author's conjecture that the trapped insects may contribute to the nourishment of the leaf of Dionæa, that leaves have actually been fed with chopped meat, and have been found to become more healthy and vigorous in consequence of this artificial stimulus.

DIONY'SIA (Διονύσια), festivals held in honour of the god Dionysus, or Bacchus. The most important of such festivals, and those which alone deserve to be specially mentioned, were held at Athens and in Attica; and these are important by reason of their being the occasions on which all the dramatic exhibitions of the Athenians took place. Both the tragedy and comedy of the Athenians arose ultimately from parts of ceremonies, which prevailed in very early times among the Greeks, at the festivals of Dionysus (Aristot. *Poet.* 4. 14); and it is alike a consequence and a proof of this origin, that the dramatic exhibitions and contests among the Athenians, from the earliest to the latest times at which we can trace them, always took place at some one of the Attic Dionysia.

These Attic Dionysia were four in number. Enumerated in the order of time, according to the Attic year, they were 1, The Lesser or Rural Dionysia, held in the month Poseideon; 2, The Lenæa, held in the month Gamelion; 3, The Anthesteria, held in the month Anthesterion; and 4, The Great or City Dionysia, held in the month Elaphebolion. They were held in four consecutive months, the first of which, Poseideon, coincides with part of December and part of January, and the last, Elaphebolion, with part of March and part of April.

Until recently, the number of the Attic Dionysia was always supposed to be three; the fourth being made to disappear by identifying the Lenæa, the second which we have named, either with the Anthesteria or with the Rural Dionysia. But the incorrectness of both these opinions, and the separate existence of the Lenæa, have been established unanswerably by Boeckh, the author of the Public Economy of Athens, in an essay published in 1819 in the Transactions of the Berlin Academy of Sciences. It is not in our power to enter into any account of the argument contained in this essay; but the reader may see an abstract of the essay in an article on the Attic Dionysia by Mr. Thirlwall, in the Philological Museum (vol. ii. p. 273), and a very brief notice in Buttman's second *Excursus*, in his edition of Demosthenes's oration against Midias. Viewed in its relation to the Attic Drama, the question which is handled in Boeckh's essay, is not unimportant.

We proceed to speak of these festivals separately, and in the order in which they occurred in the Attic year.

1. *The Rural or Lesser Dionysia*, was a festival celebrated all over Attica, the other three being confined to Athens. It was a festival of the vintage, and though it may appear to have been held somewhat late in the year (in the latter part of December), was not held later than the vintage now takes place, in a more rigorous climate, in some of the vineyards producing the Tokay wine. (*Phil. Mus.*, vol. ii., p. 296.) The Rural Dionysia were celebrated by means of separate festivals in all the demes of Attica; the expenses of these separate festivals fell on the several demes; and the performances, processions, and banquets, of which the festivals consisted, were under the superintendence of the several demarchs. It is inferred from the law of Evagoras, cited by Demosthenes (Mid. p. 517), and an inscription contained in Boeckh's Public Economy of Athens (App. viii.), that Athens joined, on the occasion of the Rural Dionysia, in the festival celebrated at Piræus. At the dramatic performances of these rural festivals, plays that had before been represented either at the Lenæa or the Great Dionysia, used to be repeated. Of the procession, in which was carried the phallus, and in which was sung the phallic hymn, there is a sketch in miniature in the *Acharnians* of Aristophanes (v. 230, fol.).

2. *The Lenæa*, so called from a wine-press (ληνὸς), whose erection, in an inclosure called for the same reason *Lenæum*, lying originally a little out of the city and near a marsh (Λίμναι), it was supposed to commemorate, may, like the Rural Dionysia, be considered a vintage-festival. Boeckh thinks that a festival which went by the name of *Ambrosia* was the same with the Lenæa; and he supposes, in order

to explain the relation of this festival to the Rural Dionysia, that, after the general vintage had ended, the fruit of some vines was still reserved to a later season, and that from this fruit was extracted a nectar, which being used on the occasion of, and serving to distinguish, this festival, might have given rise to the name *Ambrosia*. (See *Phil. Mus.*, vol. ii., p. 297.) The Lenæa were celebrated also among the Ionian states in Asia Minor, they having carried over with them at their migration the custom of the mother-country; and the Attic month Gamelion, in which the Lenæa were held, received in the Ionian calendar the name Lenæon. In Athens, the Lenæa were under the superintendence of the king-archon, and were celebrated with a public banquet at the expense of the state, and with dramatic exhibitions. As regards these last, we find that they consisted chiefly of new comedies. There are, however, instances of tragedies represented at the Lenæa, as also of comedies at the Great Dionysia, in the performances at which festival tragedies greatly predominated. It will help to show the relation between the Lenæa and the Great Dionysia that at the former foreigners were not, as at the latter, excluded from choruses, and also that the resident aliens (μέτοικοι) might at the Lenæa serve as *choragi*, which again was not permitted at the Great Dionysia.

3. *The Anthesteria*, deriving its name from the time of year at which it was held, the month of flowers, is a festival differing materially from the other three, inasmuch as it appears to have comprehended no public dramatic performances. It is inferred however by Hermann, from a law mentioned in the Lives of the Ten Orators (Pseud. Plut. vi. p. 253), and from other stray allusions to contests taking place at this festival, that plays were now rehearsed before small audiences, which were to be performed at the Great Dionysia in the succeeding month. Neither was there at the Anthesteria, as at the Lenæa and Great Dionysia, a public banquet provided by the state; but a certain sum, it is supposed, was given to each citizen, with which he was to provide his own repast. (Plut. *Resp. Ger. Pr.* c. 25.) The festival lasted during three days, which respectively bore the names *Pithoegia*, *Choes*, and *Chytri*. On the first day, as is to be inferred from the name, the wine of the preceding vintage was broached and tasted, and on the second, we may suppose, the new wine was drunk. This was accounted a festival of great sanctity, and included many mysterious ceremonies for which none but the wife of the king-archon and a small number of priestesses (γέραιραι) were qualified. One ceremony was a mock marriage between the king-archon's wife and Dionysus. (Demosth. *Neær*, p. 1369.) The Anthesteria were, like the Lenæa, under the superintendence of the king-archon. As during the Roman Saturnalia, the slaves enjoyed a temporary freedom during this festival; it was a custom also to send presents, and, as at the Roman Quinquatria, to pay one's instructors on the occasion of the Anthesteria. (Athen. x. 437.)

4. *The City or Great Dionysia*, or *Dionysia* without any epithet, the most splendid of the four festivals, were under the superintendence of the chief archon (ἄρχων ἐπώνυμος). This festival was held at a time when Athens was filled with foreigners, those bringing the tribute from her dependent states, and others. (Aristoph. *Ach.* 474, &c.) It was celebrated with a public banquet at the expense of the state, and with dramatic performances, which consisted chiefly, as has been said in describing the Lenæa, of tragedies. Plays which had once won a prize were not allowed to be repeated, though a special exemption from this rule was granted to the plays of Æschylus upon his death, and subsequently to those of Sophocles and Euripides. And indeed, so far as we may conclude from instances, in the absence of any express mention of the regulation in the case of the Lenæa, we may say that it obtained at this festival also.

The times and occasions of the institution of these several festivals are wrapped up in obscurity. The Rural Dionysia, Lenæa, and Anthesteria, were connected with a rural worship of Dionysus or Bacchus, and were, it may be safely said, antecedent to the Great or City Dionysia; and it is, in comparison with this festival that Thucydides (ii. 15) calls the Anthesteria, more antient. The Lenæa and Anthesteria were festivals held in the deme Lenæus before it was inclosed within the city. The institution of the Great Dionysia seems to be referred to in a legend, which relates that Pegasus brought an image of Dionysus Eleuthereus from Eleutheræ to Athens. Boeckh connects this with an historical tradition of the migration of the Eleutherians from their town to Athens, and conjectures that the migration, and, as he supposes, consequent institution of the Great Dionysia, preceded by a little the return of the Heraclides (1124 B.C.). Welcker, who assigns to the epithet Eleuthereus and other epithets of Dionysus a political meaning, connects with the progress of his rites in the Athenian state the progress of political liberty. A short sketch of Welcker's views, which were propounded by him in his *Nachtrag* (*Supplement to the Treatise on the Æschylean Trilogy*), is given in the article in the Philological Museum which has been already referred to.

DIONYSIUS THE ELDER was born at Syracuse about 430 B.C. In the civil troubles of Syracuse, between the party of Diocles and that of Hermocrates, who was accused of aspiring to the supreme power, Dionysius took part with the latter and was wounded in an attempt which Hermocrates made to take possession of Syracuse. He afterwards married the daughter of Hermocrates. Meantime the Carthaginians had effected their second invasion of Sicily, and had taken Selinus, Himera, and Agrigentum. (Xenophon, *Hellenika*, ii. 2.) All Sicily was in danger of falling into the hands of the conquerors. In the assembly of the people of Syracuse, convoked after the fall of Agrigentum, Dionysius accused the commanders and the magistrates of neglect and treachery. In consequence of this charge he was condemned to a heavy fine, which Philistus, the historian, paid for him, and he then repeated his charges against those who were at the head of the commonwealth, until he persuaded the people to change the military commanders, and appoint new ones, among whom himself was one. His next measure was to obtain the recall of the exiles, to whom he gave arms. Being sent to the relief of Gela, then besieged by the Carthaginians, he effected nothing against the enemy, pretending that he was not seconded by the other commanders, and his friends suggested that in order to save the state the supreme power ought to be confided to one man, reminding the people of the times of Gelon, who had defeated the Carthaginian host and given peace to Sicily. The general assembly proclaimed Dionysius supreme chief of the republic about 405 B.C. when Dionysius was 25 years of age. He increased the pay of the soldiers, enlisted new ones, and under pretence of a conspiracy against his person, formed a guard of mercenaries. He then proceeded to the relief of Gela, but failed in his attack on the Carthaginian camp; he however penetrated into the town, the inhabitants of which he advised to leave it quietly in the night under the escort of his troops. On his retreat he persuaded those of Camarina to do the same. This raised suspicions among his troops, and a party of horsemen, riding on before the rest, on their arrival at Syracuse raised an insurrection against Dionysius, plundered his house, and treated his wife so cruelly that she died in consequence. Dionysius, with a chosen body, followed close after, set fire to the gate of Acradina, forced his way into the city, put to death the leaders of the revolt, and remained undisputed possessor of the supreme power. The Carthaginians, being afflicted by a pestilence, made proposals of peace, which were accepted by Dionysius, on condition that they should retain, besides their old colonies, the territories of Agrigentum, Selinus, and Himera; that Gela and Camarina should be restored to the inhabitants, who were to pay tribute to the Carthaginians, and that Messana, Syracuse, Leontini, and the whole eastern division of the island as well as the towns of the Siculi, in the interior, should remain independent. Himilco with the Carthaginian army returned to Africa, and Dionysius applied himself to fortify Syracuse, and especially the island Ortygia, which he made his strong hold, and which he peopled entirely with his trusty partisans and mercenaries, by the aid of whom he put down several revolts which broke out against him. He took, partly by stratagem and partly by force, the towns of Leontini, Catana, and Naxus, and subjected them to Syracuse. He next prepared for a new war against Carthage by collecting men from every quarter, manufacturing a large quantity of arms, and inventing new engines for besieging towns. The termination of the Peloponnesian war (B.C. 404) had filled the Greek towns of Sicily with emigrants and disbanded mercenaries, many of whom Dionysius enlisted in his service. In the year 397 B.C. he convoked a general assembly of the people and proposed the war, which was unanimously voted, and which was begun by the people plundering the houses and vessels of the Carthaginian traders. Dionysius sent a herald to Carthage, which was then afflicted by the plague, to declare war, unless all the Greek towns in Sicily were evacuated. He next laid siege to Motya, one of the principal Carthaginian colonies in Sicily, which his brother Leptines attacked by sea. In this siege he tried his new engines, which battered down the walls, and the town being taken, the inhabitants were either killed or sold, and an immense booty was made by the Syracusans. Dionysius reduced also the other towns belonging to the Carthaginians, except Panormos, Soloeis, and Egeste. Meantime the Carthaginians collected a large force under Himilco, who landed at Panormos, while his fleet took the island of Lipara; he then marched against Messana, which he took and destroyed; and thence advanced towards Syracuse. Most of the towns inhabited by the Siculi joined the Carthaginians. On arriving at Tauromenium Himilco found his way along the sea-coast, but was stopped by a great eruption of lava from Ætna, and was obliged to march round by the western base of the mountain. Meantime Mago with the Carthaginian fleet attacked the Syracusan fleet off Catana, and completely defeated it. Himilco encamped under the walls of Syracuse, while his victorious fleet entered the great harbour. Dionysius, on his side, received ships and men from Sparta. A dreadful pestilence breaking out in Himilco's camp, Dionysius availed himself of it to attack the Carthaginians, defeated them, and burnt most of their ships. Himilco with the remainder escaped to Carthage, having paid secretly a large sum to Dionysius for his forbearance.

Dionysius settled the disbanded mercenaries as colonists at Leontini and Messana, which latter city he caused to be rebuilt. Mago, with a new Carthaginian army, having landed in Sicily, 392 B.C., was compelled to reimbark on condition of paying the expenses of the war. Dionysius now proceeded against Rhegium, with which the other towns of Magna Græcia had formed an alliance, while he gained over to his side the Lucanians, and both together defeated the allies, devastated the territories of Thurii, Croton, Caulon, Hipponium, and Locri, and obliged the Greeks to sue for peace. About this time he is said by Justinus, xx. 5, to have received an embassy from the Gauls, who had just burnt Rome, offering him their alliance. In 387 B.C. he again attacked Rhegium, and took it after a long and obstinate siege. He sold the surviving inhabitants as slaves, and put their commander to a cruel death.

Dionysius was now feared both in Italy and Sicily, and he seems to have aspired at one time to the dominion of both countries. In order to raise money, he allied himself with the Illyrians, and proposed to them the joint plunder of the temple of Delphi: the enterprise however failed. He then plundered several temples, such as that of Proserpina, at Locri, and as he sailed back with the plunder with a fair wind, he, who was a humorist in his way, observed to his friends, 'You see how the immortal Gods favour sacrilege.' Having carried off a golden mantle from a statue of Jupiter, consecrated by Gelon out of the spoils of the Carthaginians, he replaced it by a woollen garment, saying that it was more suited to the vicissitudes of the seasons: he also took away a golden beard from Æsculapius, observing it was not becoming for the son of a beardless father (Apollo) to make a display of his beard. He likewise appropriated to himself the silver tables and golden vases and crowns in the temples, saying he would make use of the bounty of the Gods. (Cicero, *De Natura Deorum*, iii. 34; Ælianus, *Histor.*, i. 20.) He also made an invasion with a fleet on the coast of Etruria, and plundered the temple of Cære, or Agylla, of 1000 talents. With these resources he was preparing himself for a new expedition to Italy, when a fresh Carthaginian armament landed in Sicily, 383 B.C., and defeated Dionysius, whose brother, Leptines, fell in the battle. A peace followed, of which Carthage dictated the conditions. The boundary of the two states was fixed at the river Halycus, and Dionysius had to pay 1000 talents for the expenses of the war. This peace lasted fourteen years, during which Dionysius remained the undisturbed ruler of Syracuse and one-half of Sicily, with part of Southern Italy. He sent colonies to the coasts of the Adriatic, and his fleets navigated both seas. Twice he sent assistance to his old ally, Sparta, once against the Athenians, 374 B.C., and again in 369, after the battle of Leuctra, when the Spartans were hard pressed by Epaminondas. Meantime the court of Dionysius was frequented by many distinguished men, philosophers and poets. Plato is said to have been among the former, being invited by Dion, the brother-in-law of Dionysius; but the philosopher's declamations against tyranny led to his being sent away from Syracuse. The poets fared little better, as Dionysius himself aspired to poetical glory, for which however he was not so well qualified as for political success. Those who did not praise his verses were in danger of being sent to prison. Dionysius twice sent some of his poems to be recited at the Olympic games, but they were hissed by the assembly. He was more successful at Athens. A tragedy of his obtained the prize, and the news of his success almost turned his brain. He had just concluded a fresh truce with the Carthaginians, after having made an unsuccessful attack upon Lilybæum at the expiration of the fourteen years' peace; and he now gave himself up to rejoicings and feasting for his poetical triumph. In a debauch with his friends, he ate and drank so intemperately that he fell senseless, and soon after died; some say he was poisoned, 367 B.C., in the sixty-third year of his age, having been tyrant of Syracuse thirty-eight years. After the death of his first wife he married two wives at once, namely, Doris of Locri, and Aristænete, daughter of Hipparinus, of Syracuse: by these women he had seven children, of whom Dionysius, his elder son by Doris, succeeded him in the sovereignty.

Dionysius was a clever statesman, and generally successful in his undertakings; he did much to strengthen and extend the power of Syracuse, and it was probably owing to him that all Sicily did not fall into the hands of the Carthaginians after the taking of Agrigentum. He was unscrupulous, rapacious, and vindictive, but several of the stories stated of his cruelty and suspicious temper appear improbable, or at least exaggerated. The works of Philistus, who had written his life, and who is praised by Cicero, are lost. Diodorus, who is our principal remaining authority concerning Dionysius, lived nearly three centuries after, and was not a critical writer. The government of Dionysius, like that of many others who are styled tyrants in antient history, was not a despotism; it resembled rather that of the first Medici and other leaders of the Italian republics in the middle ages, or that of the Stadtholders in Holland. The popular forms still remained, and we find Dionysius repeatedly convoking the assembly of the people on important occasions, when full freedom of speech seems to have been allowed.

Coin of Dionysius.

British Museum. Actual size. Silver. Weight, 263 grains.

END OF VOLUME THE EIGHTH.

Printed by William Clowes and Sons, Stamford-street.